A-601

TRANSCRIPT OF RECORD.

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1890.

No. 279.

THE WESTERN ELECTRIC COMPANY, APPELLANT,

vs.

GEORGE W. LA RUE.

APPEAL FROM THE CIRCUIT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF NEW YORK.

FILED OCTOBER 24, 1887.

merce—its business and occupation, with all their incidents, and all the means necessary to the complete and profitable conduct of that business—is free from taxation or control by the State.

McCall *v.* California, 136 U. S., 104.
Norfolk and W. R. R. Co. *v.* Penn., 136 U. S., 114.

IV. In conclusion, it is desired to emphasize the delusive character of this tax; that the tax has no relation in its standard of measurement to the domestic commerce of the company; that it is not placed on the earnings of that commerce, or regulated in any way by its amount; that it is not a tax on any property having a *situs* in the State, but is purely a license tax, exacted for the right of carrying on a business which, in all its essentials, is strictly inter-State commerce, and exacted only from those engaged in inter-State commerce; and that the insertion of the words contained in the amendment of 1889 is simply a device to evade the constitutional provision and accomplish indirectly that which cannot be done directly.

Lastly.

The decree should be affirmed.

WILLIAM PARKIN,
W. W. MACFARLAND,
Of Counsel.

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1 Circuit Court of the United States for the Southern District of New York.

GEORGE W. LA RUE
vs.
WESTERN ELECTRIC COMPANY. } In Equity.

Timothy Griffith, clerk circuit court U. S., southern district of N. Y.:

You will please issue a subpœna to the defendant, The Western Electric Company, in the above-entitled action, returnable on the first Monday of August, 1886.

BRIESEN & STEELE,
Solicitors for Complainant.

(Endorsed:) Circuit court U. S., southern district of N. Y. In equity. George W. La Rue *vs.* Western Electric Co. Præcipe for subpœna. Briesen & Steele, solicitors for complainant. U. S. circuit court. Filed June 21, 1886. Timothy Griffith, clerk.

2 Circuit Court of the United States, Southern District of New York.

GEORGE W. LA RUE
vs.
WESTERN ELECTRIC COMPANY. } Affidavit of Service.

STATE OF NEW YORK,
County of New York, } *ss:*

HARRY M. TURK, of 165 East 66 St., New York, being duly sworn, says that he is above the age of twenty-one years; that he is the person deputized by the U. S. marshal to serve the annexed writ, and that on the 21st day of June, in the year one thousand eight hundred and 86, he served the annexed writ of *subpœna ad respondendum* on The Western Electric Company, the defendant in this action, at No. 70 Trinity Place, New York city, N. Y., by delivering a copy of the same to and leaving the same with Harry B. Thayer, the general manager of said Western Electric Co., at the same time exhibiting the annexed original to said Thayer.

HARRY M. TURK.

Sworn to before me this 23d day of June, 1886.

CHARLES G. M. THOMAS,
Notary Public, Kings and N. Y. Co.

3 The President of the United States of America to Western Electric Company, Greeting:

You are hereby commanded that you personally appear before the judges of the circuit court of the United States of America for the southern district of New York, in the second circuit court, in

equity, on the first Monday of August, A. D. 1886, wherever the said court shall then be, to answer a bill of complaint exhibited against you in the said court by George W. La Rue, and do further and receive what the said court shall have considered in that behalf; and this you are not to omit under the penalty on you of two hundred and fifty dollars.

Witness Honorable Morrison R. Waite, Chief Justice of the Supreme Court of the United States, at the city of New York, on the 21st day of June, in the year one thousand eight hundred and eighty-six, and of the Independence of the United States of America the one hundred and tenth.

TIMOTHY GRIFFITH, *Clerk.*

BRIESEN & STEELS,
Complainant's Sol's.

The defendant is required to enter appearance in the above cause in the clerk's office of this court on or before the first Monday of August, 1886, or the bill will be taken *pro confesso* against it.

T. G., *Clerk.*

(Endorsed:) U. S. marshal's office, S. D. N. Y. Received
4 June 21, 1886. George W. La Rue *versus* Western Electric Company. U. S. marshal's office, New York, June 21, 1886. I hereby depute Harry M. Turk to serve the within sub. in eq. M. S. M. Mahon, U. S. marshal. I hereby certify that on the 21st day of June, 1886, at the city of New York, in my district, I served the within sub. in equity upon the within-named Western Electric Company at the time and in the manner stated in the annexed affidavit of Harry M. Turk, deputized. M. S. M. Mahon, United States marshal, southern district of New York. Dated N. York, June 24, 1886. U. S. circuit court. Filed June 29, 1886. Timothy Griffith, clerk.

5 Circuit Court of the United States for the Southern District of New York.

GEORGE W. LA RUE
vs.
WESTERN ELECTRIC COMPANY. } In Equity.

To the honorable the judges of the circuit court of the United States for the southern district of New York:

George W. La Rue, residing and doing business at the city of New York, in the county and State of New York, and a citizen of said State, brings this his bill of complaint against the Western Electric Company, a corporation doing business and having an office for the transaction of business at the city of New York, in the county and State of New York, and which, as your orator is informed and believes, is incorporated under the laws of the State of Illinois, and thereupon your orator complains and says—

That one Edgar A. Edwards was and is the original and first in-

ventor of certain new and useful improvements in telegraph keys, fully described in the letters patent hereinafter mentioned, and which had not been known or used before said Edgar A. Edwards' said invention, and which was not for more than two years
6 before his application for a patent, as hereinafter mentioned, in public use or on sale with his consent or allowance, and which had not been patented or described in any printed publication prior to his invention thereof.

And your orator, on information and belief, further shows unto your honors that said Edgar A. Edwards, being so as aforesaid the first inventor and discoverer of said improvements in telegraph keys, did, on the 16th day of January, 1883, upon due application therefor, obtain letters patent of the United States for said invention, in due form of law, under the seal of the Patent Office of the United States, signed by the Secretary of the Interior and countersigned by the Commissioner of Patents of the United States, bearing date the day and year last aforesaid and numbered 270,767, whereby there was granted and secured to Edgar A. Edwards and his heirs or assigns, or intended so to be, for the term of seventeen years from and after the date of said letters patent, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used the said invention and improvement, as set forth in said letters patent, which, or a duly certified copy of which, is ready here in court to be produced; and by virtue whereof said Edgar A. Edwards became and was the sole owner of all the rights and privileges granted and secured or intended to be granted and secured in and by said letters patent.

And your orator further shows unto your honors that afterwards, to wit, on or about the 25th day of September, 1884, the said Edgar A. Edwards, by an assignment in writing of that date, sold, assigned, and transferred unto your orator all his, the said Edgar A. Edwards', right, title, and interest in and to said invention and the letters patent therefor, granted as aforesaid, which said assignment was duly recorded in the Patent Office of the United States, as by said assignment or a duly authenticated copy thereof and the certificate of such recording thereto affixed, ready in court to be produced, will fully and at large appear.

7 And your orator further shows unto your honors that by virtue of the premises your orator became and now is the sole and exclusive owner of said letters patent and the inventions and improvements described therein and of all the rights and privileges granted and secured or intended to be granted and secured thereby, and that since he became the owner thereof as aforesaid he has invested and expended large sums of money and has been, together with his licensee, to great trouble in and about said invention, and for the purpose of carrying on the business of making and selling telegraph keys and sounders containing said patented invention and making the same profitable to himself and useful to the public, and that said invention has been and is of great benefit and advantage, and that large quantities of such telegraph keys and sounders were made according to said invention and sold by your

orator and his licensee to the great advantage of the public, and that the public have generally acknowledged and acquiesced in the aforesaid rights of your orator, and your orator believes that he will realize and receive large gains and profits therefrom if infringements by said defendant and its confederates shall be prevented.

And your orator further shows unto your honors that the said defendant has made application to him to sell said letters patent to it, which your orator refused to do, and that defendant has made application to him for a license under said letters patent, which your orator refused to grant to it, and that your orator made such refusals because he desires to retain the control of said letters patent himself, which are of great value to him.

Yet the said defendant, well knowing the premises and the rights secured to your orator as aforesaid, but contriving to injure your orator and to deprive him of the benefits and advantages which might and otherwise would accrue unto him from said invention, after the issuing of the letters patent as aforesaid and since the 25th day of September, 1884, and before the commencement of
7½ this suit, did, as your orator is informed and believes, without the license or allowance and against the will of your orator and in violation of your orator's rights and in infringement of the aforesaid letters patent, at the said city of New York and elsewhere unlawfully and wrongfully and in defiance of the rights of your orator make, construct, use, and vend to others to be used the said invention, and did make, construct, use, and vend to others to be used telegraph keys and telegraph sounders made according to and employing and containing said invention, and your orator charges it to be a fact that said defendant and its confederates still continue so to do, and that they are threatening to make the aforesaid telegraph keys and telegraph sounders in large quantities and to supply the market therewith and to sell the same.

All in defiance of the rights acquired by and secured to your orator as aforesaid and to your orator's great and irreparable loss and injury, and by which your orator has been and still is being deprived of great gains and profits which he might and otherwise would have obtained, but which have been received and enjoyed and are being received and enjoyed by the said defendant by and through its aforesaid unlawful acts and doings.

And your orator further shows unto your honors, on information and belief, that said defendant has made and sold and caused to be made and sold large quantities of said telegraph keys and telegraph sounders and has a large quantity on hand which it is offering for sale and has made and realized large profits and advantages therefrom, but to what extent and how much exactly your orator does not know, and prays a discovery thereof; and your orator says that the use of the said invention by said defendant and its preparation for and avowed determination to continue the same and its other aforesaid unlawful acts in disregard and defiance of the rights of your orator have the effect to and do encourage and induce others to venture to infringe said patent in disregard of your orator's rights.

8 And your orator further shows unto your honors that he has caused notice to be given to said defendant of said infringements and of the rights of your orator in the premises, and request- said defendant to desist and refrain therefrom; but said defendant disregarded said notice and refused to desist from said infringements, and still continues to make and sell said telegraph keys and telegraph sounders without right.

And your orator prays that said defendant, The Western Electric Company, and its officers and directors, servants, agents, attorneys, and workmen and each and every of them may be restrained and enjoined provisionally and perpetually by the order and injunction of this honorable court from directly or indirectly making, constructing, using, vending, delivering, working, or putting into practice, operation, or use, or in anywise counterfeiting or imitating the said invention or any part thereof or any telegraph keys or telegraph sounders made in accordance therewith or like or similar to those which the said defendant has heretofore made, and that the said defendant may be decreed to pay the profits unlawfully obtained by it by reason of the aforesaid infringement and the damages thereby suffered by your orator and the costs of this suit, and that your orator may have such further relief or such other relief as to this honorable court shall seem meet and as shall be agreeable to equity.

And forasmuch as your orator can have no adequate relief except in this court, to the end, therefore, that the said defendant may, if it can, show why your orator should not have the relief hereby prayed, and may, but not upon oath (an oath being hereby waived), according to one of its officers' best and utmost knowledge, remembrance, information, and belief, full, true, direct, and perfect answers make to the premises and to all the several matters hereinbefore stated and charged as fully and particularly as if severally and separately interrogated as to each and every of said matters, and may be

9 compelled to account for and pay to your orator the profits by it acquired and the damages suffered by your orator from the aforesaid unlawful acts—

May it please your honors to grant unto your orator the writ of injunction, as well provisional as perpetual, issuing out of and under the seal of this honorable court, commanding, enjoining, and restraining the said defendant, The Western Electric Company, and its officers, directors, servants, agents, attorneys, and workmen and each and every of them, as is hereinbefore in that behalf prayed.

May it please your honors to grant unto your orator the writ of subpœna issuing out of and under the seal of this honorable court, directed to the said defendant, The Western Electric Company, commanding it, by a certain day and under a certain penalty, to be and appear in this honorable court, then and there to answer the premises and to stand to and abide such order and decree as may be made against it.

And your orator will ever pray, &c.

BRIESEN & STEELE,
Comp'ts Sol'rs.

ARTHUR v. BREISEN, *Of Counsel.*

UNITED STATES OF AMERICA,
Southern District of New York, City and County of New York, } ss:

On this 19th day of June, 1886, before me personally appeared George W. La Rue, the above-named complainant, who, being by me first duly sworn, deposes and says that he has read the foregoing bill of complaint and knows the contents thereof, and that the same is true of his own knowledge, except as to the matters therein stated on information and belief, and as to those matters he believes
10 it to be true, and that he verily believes Edgar A. Edwards to be the true, original, and first inventor of the invention described and claimed in the letters patent referred to in said bill.

GEORGE. W. LA RUE.

Subscribed and sworn to before me this 19th day of June, 1886.
[L. S.] DAVID S. GEER,
Notary Public, N. Y. Co.

(Endorsed:) U. S. circuit court, southern district of New York. George W. La Rue *vs.* Western Electric Company. Bill in equity. Briesen & Steele, compl't's sol'rs, 229 Broadway. U. S. circuit court. Filed June 21, 1886. Timothy Griffith, clerk.

11 United States Circuit Court, Southern District of New York.

GEORGE W. LA RUE
vs.
WESTERN ELECTRIC COMPANY.

I hereby enter my appearance for defendant in the above cause.

GEORGE P. BARTON,
Room 31, 228 *La Salle Street, Chicago.*

WM. J. ARMSTRONG,
Agent, 70 *Trinity Place.*

(Endorsed:) U. S. circuit court, southern dist. of N. Y. Geo. W. La Rue *vs.* Western Electric Co. Defendant's appearance. U. S. circuit court. July 31, 1886. Timothy Griffith, clerk.

12 United States Circuit Court for the Southern District of New York.

GEORGE W. LA RUE
vs.
WESTERN ELECTRIC COMPANY.

The Answer of the Western Electric Company, Defendant, to the Bill of Complaint of George W. La Rue, Complainant.

This defendant, saving and reserving to itself all and all manner of benefit of exception which may be had or taken to said bill of complaint on account of its errors and insufficiencies, makes answer to said bill of complaint as follows:

1. This defendant admits, upon information and belief, that letters patent numbered 270,767 were granted to Edgar A.
13 Edwards on the 16th day of January, 1883, for certain improvements in telegraph keys, and that said Edwards, on the 25th day of September, 1884, by an assignment in writing, duly assigned to George W. La Rue, complainant, the entire right, title, and interest in and to said invention and the letters patent granted therefor as aforesaid.

2. This defendant, upon information and belief, denies that said complainant has introduced said invention into public use, and denies that he has expended or invested large sums of money in and about said invention or in the business of making and selling telegraph keys and sounders containing said patented invention, and denies that the public have generally acknowledged and acquiesced in complainant's alleged rights and exclusive privileges under said patent.

3. This defendant, on information and belief, denies that said Edgar A. Edwards was the first or original inventor of any patentable improvement forming the subject-matter of the said letters patent, and avers that said letters patent were and are therefore null and void.

4. This defendant, on information and belief, in view of the state of the art in question as that art existed at the time said Edgar A. Edwards made his said alleged improvements, denies that either of the matters or things said to have been originated by said Edwards and claimed in said letters patent amounts to a patentable invention, and avers that the said alleged improvements were the product of mere mechanical skill, and that said letters patent are therefore null and void.

5. This defendant, on information and belief, denies that there is any utility whatsoever in any matter or thing described or claimed as an invention in said letters patent, and avers that said letters patent are therefore null and void.

14 6. This defendant, pursuant to the statute in such case made and provided, here states and gives notice that it will show and prove that prior to any invention of said Edwards of the said things patented or any material and substantial part thereof the same or some substantial and material part thereof were known to and used by the following-named persons at the following-named places—that is to say:

To and by John A. Seely and Edward A. Eckert, such prior knowledge and use being at Cincinnati, Ohio, and said Seely and Eckert now residing in the city of New York.

To and by Hilo C. Kellogg, Enos H. Barton, Charles E. Scribner, and Ernest P. Warner, such prior knowledge and use being at Chicago, Illinois, and all of said persons now residing at said Chicago, Illinois.

To and by Charles D. Haskins and Frank L. Pope, such prior knowledge and use being at New York city and at Bradford, Vermont, said Haskins and Pope now residing in New York city.

7. This defendant, further answering, denies that it has ever in-

fringed said letters patent; denies that it has ever infringed upon any right or rights whatsoever of said complainant; denies said complainant's right to an account of damages, of profits, or costs to be recovered from this defendant; denies that said complainant has a right to an injunction, provisional or perpetual, against this defendant, and denies that said complainant is entitled to any other or further relief against this defendant.

8. This defendant, further answering, admits that it is engaged in the business of manufacturing and selling electrical and telegraphic apparatus, and that as a part of its said business it has made and sold and is now making and selling large numbers of telegraph keys and telegraph sounders, and that it intends to continue its said business, because it has not included in its said telegraph keys or telegraph sounders or other telegraph instruments any of the inventions or improvements patented or claimed in said Edwards' patent.

All of which matters and things this defendant is ready to aver, maintain, and prove as this honorable court shall direct, and this defendant prays to be hence dismissed with its reasonable costs and charges wrongfully sustained in this behalf.

WESTERN ELECTRIC COMPANY.

[Seal of W. E. Co.]

J. M. JACKSON, *Secretary.*

GEORGE P. BARTON,
Solicitor and of Counsel.

STATE OF ILLINOIS, } ss;
County of Cook, }

J. M. JACKSON, being duly sworn, on oath says that he is secretary of the defendant company; that he has read the foregoing answer and knows the contents thereof, and that the same is true of his own knowledge except as to such matters and things as are therein stated upon information and belief, and as to such matters and things he believes it to be true.

[SEAL.] J. M. JACKSON.

Subscribed and sworn to before me this 25th day of August, A. D. 1886.

WILLIAM S. GRANGER,
Notary Public.

General replication filed September 6th, 1886.

Endorsed: U. S. circuit court, so. dist. of New York. George W. La Rue *v.* Western Electric Co. Answer. George P. Barton, def't's sol'r. U. S. circuit court. Filed August 27th, 1886. Timothy Griffith, clerk.

16 Circuit Court of the United States for the Southern District of New York.

GEORGE W. LA RUE
vs.
WESTERN ELECTRIC COMPANY. } In Equity.

The Replication of George W. La Rue, Complainant, to the Answer of the Western Electric Company, Defendant.

This repliant, saving and reserving unto himself now and at all times hereafter all and all manner of benefit and advantage of exception which may be had or taken to the manifold insufficiencies of the said answer, for replication thereunto says that he will aver, maintain, and prove his said bill of complaint to be true, certain, and sufficient in law to be answered unto, and that the said answer of the said defendant is uncertain, untrue, and insufficient to be replied unto by this repliant.

Without this, that any other matter or thing whatsoever in the said answer contained material or effectual in law to be replied unto and not herein and hereby well and sufficiently replied unto, confessed or avoided, traversed or denied, is true.

All of which matters and things this repliant is and will be ready to aver, maintain, and prove as this honorable court shall
17 direct, and humbly prays as in and by his said bill he has already prayed.

BRIESEN & STEELE,
Solicitors for Complainant.

(Endorsed:) United States circuit court, southern district of New York. In equity. G. W. La Rue *vs.* Western Electric Co. Replication. Briesen & Steele, solicitors for complainant, No. 229 Broadway, New York, N. Y. U. S. circuit court. Filed Sep. 6, 1886. Timothy Griffith, clerk.

18 Circuit Court of the United States for the Southern District of New York.

GEORGE W. LA RUE, Complainant,
vs.
WESTERN ELECTRIC COMPANY, Defendant. } In Equity.

Please take notice that we shall proceed to take proofs for final hearing on the part of the complainant under the 67th rule of the Supreme Court for courts of equity, as amended, and in accordance with the statutes in such cases made and provided and in pursuance of the rules and practice of this court, before Samuel R. Betts, Esq., an examiner of this court under said statutes and rules, at our office, No. 229 Broadway, New York city, New York, on the 14th day of September, 1886, at 11 o'clock in the forenoon.

We desire the evidence to be adduced in this cause to be taken orally.

You are invited to attend and cross-examine the witnesses produced. The examination will be adjourned to such time and place as may be required without further notice.

Dated New York city, 6 Sept., 1886.

Very respectfully, BRIESEN & STEELE,
Compl't's Solicitors.

To George P. Barton, Esq., def't's solicitor.

19 Circuit Court of the United States for the Southern District of New York.

GEORGE W. LA RUE, Complainant,
vs.
WESTERN ELECTRIC COMPANY, Defendant. } In Equity.

Testimony taken on behalf of complainant before Samuel R. Betts, United States commissioner, at the office of Brieson & Steele, 229 Broadway, New York, pursuant to the notice hereto annexed.

DATED NEW YORK, *September* 14, 1886—11 a. m.

Present: A. v. Briesen, for complainant.
George P. Barton, Esq., for defendant.

Counsel for complainant offers in evidence a telegraph sounder and asks the counsel for defendant to admit that the same was manufactured by the defendant before the commencement of this suit and within the year 1886.

Counsel for defendant admits that said sounder was made prior to the commencement of this suit by defendant and since January, 1886.

The same is offered in evidence by counsel for complainant and marked "Complainant's Exhibit B, S. R. B., examiner, Sept. 14, 1886."

Counsel for complainant also offers in evidence a duly certified copy of letters patent No. 270,767, granted to E. A. Edwards
20 Jan'y 16, 1883, for improvement in telegraph keys, and the same is marked Complainant's Exhibit A, S. R. B., Ex., Sept. 14, 1886.

Counsel for complainant also offers in evidence a telegraph key and asks the defendant's counsel to admit—

1st. That it is of the manufacture of defendant.

2nd That it was made by defendant for a licensee of complainant, to wit, Lytle and Company.

3d. That it was made by defendant before things like Exhibit B were made.

Defendant's counsel admits that the said key was made by defendant for Lytle & Co. upon the request of complainant, but he is not advised as to the time when it was made.

The said key is marked Complainant's Exhibit E, S. R. B., examiner, Sept. 14, 1886.

ROBERT C. MULLER, being duly sworn, deposes and says as follows:

My name is Robert C. Muller; I reside at No. 206 53rd street, South Brooklyn, N. Y.; I am 35 years of age; my business is that of mechanic. I am employed by the New Haven Clock Co. since last month; before that I worked for the Western Electric Company; I worked for them nearly seven years.

I look at Complainant's Exhibit E. This key appears to me as the workmanship of the Western Electric Company, and therefore I think this key is made by the Western Electric Company. As far as I recollect, it must be made seven or eight or nine months ago. As far as I know, there was a lot made of 500 of these keys.

I look at Complainant's Exhibit B. This kind of sounder was made by defendant about four or five months after the telegraph keys were made about which I have testified.

21 Cross-examination:

1 X Q. When did you first see a sounder like Exhibit B?

A. About five or six months ago.

2 X Q. Where?

A. At the factory of the Western Electric Company.

ROBERT C. MULLER.

Subscribed and sworn to before me this 14th day of September, 1886.

SAM'L R. BETTS, *Examiner.*

MAJOR D. PORTER, being duly sworn, deposes and says as follows:

My name is Major D. Porter; my age is 28 years; my residence is 319 9th street, South Brooklyn; my business is inventor and constructor of instruments, particularly in the electrical line.

1 Q. Have you read and do you understand the letters patent here in suit, Complainant's Exhibit A?

A. Yes, sir.

2 Q. Will you please compare the telegraph sounder marked Complainant's Exhibit B with the devices shown, described, and claimed in said patent and state the result of your comparison.

A. I should say that this spring was the same, except this device here (pointing to D^1 D, figure 3) is in the centre instead of at the side. I should say that the spring in the side would accomplish the same result. The only reason why it is put on the side is to manufacture it quicker and easier. In the sounder they use the adjusting spring. I shouldn't think it would be necessary, as they might make this spring a little heavier here or run the lever out here to balance it.

I don't see that there is anything more to say about it.

22 3 Q. Then, do I understand you to mean that the torsional spring which extends across one end of the lever of Ex. B. is, in your opinion, the same as the torsional spring D, which is referred to in said patent?

A. Yes, sir.

Direct examination closed.

4 X Q. State whether or not Exhibit B without the retractile spring would be an operative sounder—that is to say, if you should take off the coiled spring would the sounder work successfully?

A. I should make that torsional spring a little heavier and a little wider. I should think it would work very successfully then.

5 X Q. My question referred to the sounder Exhibit B as it is, not as you would prefer to make it. The question is, is the sounder as it is made operative as a sounder without the coiled spring?

Witness says to counsel for complainant: Have you a screw-driver?

6 X Q. Before using a screw-driver I wish you would answer my question, giving your opinion if you are not able to state positively.

A. I should say that B would not, but this one will—any of them will with the torsional spring properly adjusted.

7 X Q. Then, in order that Ex. B might be operated as a sounder without the coiled spring it would be necessary to adjust the tension of the torsional spring, in your opinion?

Counsel for complainant desires it recorded that at the time cross-question 6 was asked and answered the witness had before him two sounders—one, Exhibit B, while the other bears a label marked Exhibit Sounder Western Electric Company, and another
23 label marked Sample Sounder, and was marked on the metal base plate "pat. appl'd for;" also that this second sounder is the one to which the witness refers in answer 6, where he says "this one will."

Counsel for complainant asks that said sounder be offered in evidence by the defendant, whose property it is.

Counsel for defendant states that the sounder may be considered as in evidence, and it is marked with the initials of the examiner and this date on that label, which bears the title "Exhibit Sounder Western Electric Company."

8 X Q. State whether or not you ever knew of a telegraph sounder being used practically without the coiled retractile spring.

A. Yes, sir.

9 X Q. Tell when and where.

Objected to as not cross-examination and not connected with the subject-matter in suit.

10 X Q. Confine your answer to telegraph sounders in which a torsional spring has been used without the coiled spring. Do you know of any such having been in practical use?

A. I don't know of any being in use in any telegraph company.

11 X Q. Did you ever know of such sounders being made except experimentally?

A. No, sir.

12 X Q. Then, it is with you simply a matter of opinion when you say, in answer to question 6, "but this one will"?

A. No.

13 X Q. You say it is not merely an expression of opinion. You have previously testified that you did not know of the use practi-

cally of a telegraph sounder without the coiled spring. Your
24 answer to question 6 is not founded upon any practical use you have made or seen made of sounders in which coiled springs have not been employed. Am I correct?

A. Yes, sir; it is.

14 X Q. Do you find anything else in the sounder exhibit like anything described in the patent, except the spring to which you have referred? If so, state what it is.

A. I should think the torsional spring was just the same.

15 X Q. Do you find anything else the same?

A. I find these posts, two posts, and set-screws for holding the torsional spring, the lever attached to the center of the spring.

16 X Q. Do you find anything else the same?

A. The adjusting screws for adjusting the lever.

17 X Q. Anything else?

A. No, sir.

18 X Q. What is the function of the lever B described in the patent?

A. I should say it was for transmitting—open and close the circuit.

19 X Q. How does it work—or how is it worked?

A. It is worked by hand.

20 X Q. What is the lever B usually called?

A. Key lever.

21 X Q. Its function is to interrupt the circuit or break the circuit, is it not?

A. Either one.

22 X Q. What is the function of the lever shown in the sounder, Ex. B?

A. To receive message by sound—to work in unison with the key.

23 X Q. What is the lever in the sounder usually called?

A. Sounder lever.

24 X Q. It is operated by the armature of the electric magnet, is it not?

A. It may be sounded by the lever.

25 X Q. Please answer my question.

A. Yes, sir.

25 26 X Q. Its function is to make a noise, is it not?

A. Which is that, sir?

27 X Q. I refer to the lever of the sounder. It is designed to indicate to the ear the interruptions or breaks in the circuit made by the key, is it not?

A. Yes, sir.

28 X Q. Is the circuit broken by the sounder lever?

Objected to as indefinite, not saying which circuit counsel means—whether the electric circuit or circuit of sound transmission.

A. Not in that case.

29 X Q. Where is your place of business?

A. New York, Boston, Connecticut.

30 X Q. Where is your office?
A. New York, 16 and 18 Park Place.
31 X Q. Do you consider yourself an expert in patent matters?
A. I don't profess to be an extra expert.
32 X Q. Do you consider yourself expert at all in patent matters?
A. I have had an experience of seven years by inventing and constructing and building models.
33 X Q. Your principal business is making models, then, is it?
A. Yes, sir.
34 X Q. Are you a telegraph operator?
A. No, sir.

MAJOR D. PORTER.

Subscribed to and sworn to before me this 14th day of September, 1886.

SAM. R. BELLS, *Examiner.*

Complainant rests.

26 Circuit Court of the United States for the Southern District of New York.

GEORGE W. LA RUE, Complainant,
vs.
WESTERN ELECTRIC COMPANY, Defendant. } In Equity.

Please take notice that we shall proceed to take proofs for final hearing on the part of the complainant in rebuttal, under the 67th rule of the Supreme Court for courts of equity, as amended, and in accordance with the statutes in such cases made and provided and in pursuance of the rules and practice of this court, before Samuel R. Betts, Esq., an examiner of this court under said statutes and rules, at our office, No. 229 Broadway, New York city, New York, on the 15th day of February, 1887, at 11 o'clock in the forenoon.

We desire the evidence to be adduced in this cause to be taken orally.

You are invited to attend and cross-examine the witnesses produced. The examination will be adjourned to such time and place as may be required without further notice.

Dated New York city, 31st Jan'y, 1887.

Very respectfully, BRIESEN & STEELE,
Complainant's Solicitors.

To George P. Barton, Esq., defendant's solicitor.

27 Testimony taken in rebuttal on the part of complainant, under the 67th rule in equity, &c., before Samuel R. Betts, a standing examiner of the U. S. circuit court, pursuant to notice hereto annexed.

229 BROADWAY, NEW YORK CITY,
TUESDAY, *Feb'y 15th*, 1887.

Met pursuant to notice.

Present: A. v. Briesen, Esq., of counsel for complainant, and George P. Barton, Esq., of counsel for defendant.

T. O'CONOR SLOANE, Ph. D., a witness called on the part of complainant in rebuttal, and having been first duly sworn, deposes and says:

1 Q. What is your name, age, residence, and occupation?

A. My name is T. O'Conor Sloane; I am 35 years of age; I reside at South Orange, New Jersey; by occupation I am a chemist and engineer. I am a graduate of Columbia College, from which institution I received the degrees of "engineer of mines" and "doctor of philosophy." Since graduating I have been concerned in professional and scientific occupations as chemist, physicist, and engineer. This work has involved considerable experimental and practical work in electricity. For the last four years I have devoted much time to the study of patents, their drawings and specifications, and drawings, models, and other matters connected with or referring to mechanical structures, patented or otherwise. Much of this work has been for the purpose of preparing myself to testify in suits in which mechanical patents were the subject of controversy. During said period I have testified in a large number of such suits.

2 Q. Have you examined the letters patent in suit, No.
28 270,767, granted to E. A. Edwards, and do you understand the same?

A. I have examined a copy of said letters patent, and believe I understand them.

3 Q. Have you examined the testimony of the defendant's witnesses, John A. Seeley, Chas. D. Haskins, Frank L. Pope, Ernest P. Warner, and Enos M. Barton, and the various exhibits produced by them?

A. I have examined the testimony of said witnesses and also the following exhibits: "Exhibit Warner Spring Lever Key, Jan. 12, 1887;" Defendant's Exhibit "Old Style Western Union Key," Defendant's Exhibit "Adjustable Torsional Spring," "Exhibit Old Style Morse Key," Defendant's Exhibit "Spring Lever Telegraph Key, Dec. 3, 1886;" "Exhibit Pole-Changer." On pages 32 and 33 of the printed copy of defendant's record in this suit I find alluded to a book entitled "Manual of Electricity," "Noad," which allusion is followed by a quotation said to be from page 755. This quotation I have examined, but not the original work.

4 Q. Compare Defendant's Exhibit Pole-Changer with the invention described and claimed in the letters patent in suit and state whether or not you find said invention shown in said Exhibit Pole-Changer, stating your reasons for any opinion you may express.

A. In letters patent No. 270,767, granted to E. A. Edwards, I find described a structure comprising the following parts: A lever attached to a flat spring, the ends of which spring are secured to posts by means of screws, and which lever is further provided with screws for adjusting its play and thereby the torsional effect of the flat spring; such spring may, if desired, be furnished with a projecting rib in order to stiffen it. The adjusting screws in this key act directly upon the lever, and each screw tends to limit or regulate its play in one or the other direction respectively. The spring is secured at both ends and acts as a fulcrum for the lever to oscillate about. Screws are provided for attaching the flat spring in place, whereby it can be readily removed.

29 In the Exhibit Pole-Changer I find no flat spring secured to fixed supports at each end, one end being on each side of the point of attachment of the lever. I do not find in it screws for regulating the motion of an oscillating lever by acting directly thereon. I do not find screws in it, used for attaching the extremities of a torsional spring to fixed abutments or posts. The pole-changer contains an oscillating lever, but it is not fulcrumed to a torsional spring, in the sense of the patent, in which the lever is attached to the centre of a spring, both of whose ends are fixed. I find in the pole-changer no torsion spring provided with a projecting rib. In the patent, under four clauses, are claimed different combinations of various parts, just described in the first part of this answer. The first claim is for the combination of the lever of a torsional spring upon which said lever is fulcrumed. This combination, for reasons already stated, I do not find present in Exhibit Pole-Changer.

In the next claim the projecting rib D^1 of the torsion spring is included. This also I do not find present in Exhibit Pole-Changer, for the reasons already stated. The adjusting screws H and H^1 and the screws E and E^1, being characteristic elements of the two succeeding clauses of the claim, I also find wanting in the Exhibit Pole-Changer; hence I do not find the invention of the Edwards patent, as described and claimed therein, in the "Exhibit Pole-changer." The elements of the invention are wanting, and its characteristic features cannot be found in the pole-changer.

5 Q. Compare also the following exhibits with the invention described and claimed in the letters patent in suit, and state whether or not you find said invention shown in any one of them, stating your reasons for any opinion you may express. The exhibits I refer to are severally marked "Defendant's Exhibit Old Style Morse Key," "Defendant's Exhibit Spring Lever Telegraph Key," "Warner Spring Lever Key," "Adjustable Tonsional Spring," "Defendant's Exhibit Old Style Western Union Key."

A. In "Defendant's Exhibit Old Style Morse Key" I find wanting the following distinctive parts of the invention described and
30 claimed in the patent in suit, viz., the torsional spring, and consequently the screws E E^1 of the patent and the rib D^1. Hence I find wanting in it the invention described and claimed in said letters patent, as one or more of the elements just mentioned

enter into all the claims. In the "Defendant's Exhibit Spring Lever Telegraph Key" I also find wanting the torsional spring, with its accessories, and the adjusting screws H and H^1 or any suggestion thereof for regulating its movements; hence I do not find present in it the invention of the patent in suit. In the "Exhibit Warner Spring Lever Key" I find wanting the torsion spring, with its accessories, the two adjusting screws H and H^1; hence I do not find in it the invention described and claimed in the patent in suit. In "Defendant's Exhibit Adjustable Torsional Spring" I find wanting the flat torsional spring, the adjusting screws H H^1, the rib D^1, and the screws E and E^1; hence I do not find present in the "Defendant's Exhibit Torsional Spring" the invention described and claimed in the patent in suit. It is true that in the "Exhibit Adjustable Torsional Spring" a wire is shown attached to two supports across whose centre, between the two supports, a bar or lever extends which is attached to the spring and is supported thereby; but the ends of this wire pass through comparatively large holes in the end supports and may have considerable freedom of movement therein, such freedom varying with the way in which they may be twisted or bent around these supports or, under certain circumstances, with the weight of the lever. This slender wire passing loosely through openings that admit of its rotation and with ends simply bent once back upon itself does not represent the torsional spring of the patent, all of whose forms include the idea of a substantial spring adapted to have its ends firmly secured and capable, by its general characteristics, of acting as a torsional fulcrum for a lever. In the old-fashioned buck-saws a twisted rope, twisted to a greater or less degree and held so twisted by a transverse stick which bore against the cross-brace of the saw, was used. This might just as well be produced as representing the invention of the Edwards patent as the "Defendant's Exhibit Torsional Spring." Neither of them
31 show the invention in question. In the "Defendant's Exhibit Old Style Western Union Key" I find wanting the torsional spring in its entirety, no representative thereof being present.

That alone is sufficient to preclude this exhibit from showing the invention of the Edwards patent in suit. Recurring once more to "Defendant's Exhibit Adjustable Torsional Spring," it may be noted that it may exhibit some slight effect of torsion, but any pivot in a similar position, whose ends were held in supports exerting friction thereon, would also exhibit some slight torsional effect, but it would be absurd to claim that so slight a torsional effect should exhibit the definite retractile and torsional effects of the spring of the Edwards patent.

6 Q. Have you made any experiments with the telegraph sounders "Complainant's Exhibit B" and "Exhibit Sounder Western Electric Co.?" If so, state when and where and describe the experiments and state what their results were.

A. I have made experiments with the sounders in question. I connected them in a short circuit with a battery and telegraph key. One sounder had the spiral retractile spring entirely detached from the lever hook and was tried with varying battery power. It worked

very well, producing a good sound, and at as short intervals as I could move the key. The spring showed ample retractile power. The other sounder which I tested had the retractile spring attached to the hook. On trial it worked very well with the spiral spring attached to the hook. The spring was then detached, leaving it dependent for its action upon the fulcrum spring and general adjustments other than the spiral spring. Thus arranged, after proper adjustment of the screws, the sounder worked excellently. Both of them were thus proved to be operative sounders without the presence of the retractile spiral spring, the fulcrum spring being sufficient for their operation. The current in these experiments varied from one to four bichromate cells, including probably a range in electromotive force from one and one-half to six volts on a circuit external to the instruments and battery, of practically no resistance.

32 7 Q. What were the results under these varying conditions?

A. The sounders worked perfectly, whatever battery I applied to them.

8 Q. Are the last-named two exhibits practically working sounders without the use of the coiled spring underneath the armature?

A. Both of them I found to be such.

9 Q. It is claimed by the witness Pope for the defendant that the residual magnetism would prevent the sounder from working as a practical instrument if the torsional spring alone was depended upon for the upward movement of the lever. Did you find this to be a fact while making your practical experiments with the two sounders in question?

A. I did not. I found that by means of the adjusting screws the effect of the residual magnetism could be amply provided for, the armature being drawn upward, away from the magnet by the torsional fulcrum spring.

10 Q. Please compare the two sounders, "Exhibit Western Electric Sounder" and "Complainant's Exhibit B," with the several claims of the patent in suit, having due regard to the state of the art as disclosed by the evidence in this case.

A. As far as the patent in suit is concerned, I find both sounders to be identical, and that both of them present the elements of the claim of the Edwards patent in the combinations recited in said claim.

The combination of the first clause of the claim is for the combination, with the circuit-breaking lever, of a torsional spring upon which said lever is fulcrumed, substantially as described. In the sounders I find present a torsional spring identical in construction with the spring of the Edwards patent acting as support and fulcrum for a transverse lever, which lever is adapted to act as a circuit-breaking lever if the proper accessories were provided, including a circuit to be broken. Both these parts are present in the combination of the first clause of the Edwards claim and represent its invention. The next clause is identical with the first, except that one additional element is included, the rib D^1. This additional

33 element I find also present in the sounders extending down-

wards from the fulcrum spring, and hence I find the invention of the second clause of the claim present in the sounders. In the third clause of the claim the lever fulcrumed upon the torsional spring with the adjusting screws H H^1 is claimed in combination substantially as described. These elements in the combination named I find present in both sounders, the two screws H H^1 being represented by the two adjusting screws working upon the outer end of the lever. In addition to the lever and torsional fulcrum spring, the posts to which the spring is connected, and the screws E E^1, in combination, are included in the fourth clause of the claim. These parts I find present in the sounders, as the ends of the fulcrum spring rest upon two posts, to which the ends of the spring are secured by screws, which three elements, with the lever as a fourth, exist in the combination of the fourth clause of the claim.

The actual or necessary distinction between such a lever as that of the sounders in question and a circuit-breaking lever such as sed in relays, being a functional one, does not, to my mind, affect e comparisons which I have made; neither does the state of the affect them, such state of the art, as far as disclosed, having been eady very fully considered by me in my answers to the preceding questions.

(Direct closed.)

Cross-examination by Mr. BARTON:

10½ X Q. Do you know how to telegraph?

A. I do not.

11 X Q. Do you know what residual or remnant magnetism is?

A. It is the magnetism retained by all or almost all samples of iron after exitation from a battery and surrounding coil of wire or other exciting cause. While the exciting cause exists in its full intensity the iron is magnetized in proportion to said cause. When the cause of excitation is removed the iron loses its magnetism with more or less rapidity, according to its size, composition, and other peculiarities, often retaining a slight amount of magnetism for a long period. The remnant left in it after the cause of excitation has ceased, which remnant gradually grows weaker or tends to disappear, is termed residual magnetism.

12 X Q. In your experiment with the sounders did you or did you not observe any effects resulting from residual magnetism? Please answer yes or no, if you can.

A. I did observe such effects; the armature sometimes adhering to the magnet cores or, if not in absolute contact with them, remaining depressed. This tendency or difficulty I overcame by proper use of the adjusting screws.

13 X Q. Then you found that the armature did tend to stick to the poles, did you?

A. I found strongly pronounced effects of residual magnetism, which I made the torsional spring overcome after proper adjustment of the adjustment screws so that the armature should not be in absolute contact with the poles, the proper condition for the work-

ing of the instrument according to the testimony of one of the witnesses for the defense. I believe it was Mr. Pope.

14 X Q. Did you find the effects of the residual magnetism in both the sounders?

A. I am not positive about that. I should consider it rather extraordinary if it was not displayed by both.

15 X Q. I am asking you as to facts and understand your answer to my question to be that you do not know. State whether you observed any effects of residual magnetism when the armature was adjusted so as to be at about the distance of the thickness of writing paper from the poles.

A. I made no attempts to secure an adjustment to any specific distance from the poles. I did not notice what the distances from the poles were, and I should consider that the definition of a distance as equal to the thickness of a sheet of writing paper would be extremely indefinite, owing to the varying thickness of paper.

16 X Q. Then you are not aware that a sounder, in orde
35 to be an operative sounder for commercial purposes, mu
have its armature adjusted in close proximity to its poles, y
so far removed as not to touch the poles?

A. I am aware that some such statement as this has been ma
by one of the witnesses for the defense. If the armatures were of su
nature as to retain residual magnetism, my idea would be that son
such adjustment would be desirable; if the cores were so constructed
or arranged as to be free from residual magnetism, then I should not think such adjustment by any means a requisite.

17 X Q. Then the first you ever learned with respect to the adjustment of a sounder was from the testimony of defendant's witnesses, was it not?

A. I have experimented with many pieces of electrical apparatus of different kinds to a sufficient extent, in conjunction with m
reading, to have formed opinions of my own. I think the "writing paper" standard of the defendant's witness is a very indefinite on
and one that shows very indefinite ideas as to the distance on th
part of the witness.

(Objected to as non-responsive).

18 X Q. Question repeated.

A. It was not.

19 X Q. When previously did you learn anything specifically o
the subject of the adjustment of sounders?

A. For many years past I have given much attention to electrical matters in general and have used various pieces of electrical apparatus, such as electric bells, switches, and induction coils. I certainly do not claim and have not claimed anywhere to possess the peculiar knowledge of a telegraph operator, nor his full specific knowledge as regards the adjustment of apparatus to meet his practical needs. A sounder whose lever will move up and down in as rapid succession as the movements which the hand can impart to a telegraph key is operative.

(Objected to as not responsive and question repeated.)

36 20 X Q. Question repeated.

A. An electric bell is an automatic sounder, and I think my experience with that commenced about 18 years ago.

21 X Q. Answer X Q. 19 with respect to telegraph sounder.

A. Restricting the term telegraph sounders to sounders used on telegraph lines for the transmission of signals, my experience with them is pretty well restricted to my work in this suit. Residual magnetism, so hurtful to them, would be equally bad in electric bells and induction coils if means were not applied to counteract it, such as the use of iron of proper quality and shape, of condensers, and of the proper adjustment affecting the play of the armature.

22 X Q. Your previous examination indicates that you have a correct idea of the method of transmitting telegraph signals. You must understand that the armature lever of the sounder must respond to the key so as to strike the stops and make audible sounds at each stroke. The receiver listening to these sounds is able to read the message. In bells no such accurate strokes or movements of the armature lever are required. Considering the difference in the uses of a bell and the uses of a sounder, do you think your experience with bells would be sufficient to enable you to properly adjust sounders?

A. I think my general experience and knowledge would be sufficient, and I think it will also be found that the same operator will escape adjust the sounder twice alike in succession, and that each operator would tend more or less to have his own individual way of adjusting.

23 X Q. Mr. Pope and other witnesses have testified in substance relative to the adjustment of the armature of a sounder with respect to the magnet poles should be in close proximity thereto, but so as not to touch. In substance, that the adjustment of the stroke of the armature lever is made when the parts of the sounder are first assembled and to put together; that the adjustment once made need not be changed; that the adjustment of the sounder is definite. Do you know anything to the contrary?

37 A. I find on page 9 of the printed copy of defendant's record the following statement by the witness, Mr. Charles D. Haskins: "A. Strictly speaking, no; for the reason that a sounder should have means of varying the retractile force in proportion to the varying condition and power of the battery which supplies the electrical energy for its operation." This certainly, in connection with the fact that screws are provided for regulating the play of the armature, implies that it should be adjusted by the operator. In Mr. Pope's testimony I do not find the statement made concerning which you have enquired. I do not find the statement either in Mr. Barton's or Mr. Warner's testimony. In addition, the adjusting screws are provided with milled heads and milled jam-nuts, which conveniences are adapted for hand adjustment and certainly imply the propriety of the same.

24 X Q. Then do you know nothing to the contrary except as you have stated above?

A. I have testified that I have not found a certain statement in a copy of the testimony of defendant's witnesses that answer the 23 X Q., and in substance this one, as I have gone through the record with reasonable care, but if any such statement may have escaped me I should, of course, wish to to have it pointed out.

25 X Q. Assuming that the witnesses or some of them have testified substantially as stated in my question, will you state whether you know anything to the contrary, except as stated in your previous answers.

A. It would require a very great modification of my views as to human nature to believe that a sounder with such adjusting screws as are present on these adapted for such convenient manipulation by the hand of the operator could be placed and used in a telegraph office by an operator without his making use of them for the purposes of adjustment. It would require a very great modification of my views as to mechanical practice to believe that such screws could be placed where they are on these sounders, and of their construction, if they were not designed to be used by the person using the sounder.

38 26 X Q. Have you now stated all you know to the contrary?

A. That is substantially the extent of my knowledge. I wou[illegible] suggest that Mr. Pope or Mr. Haskins could confirm what I h[illegible] said, from their more practical acquaintance with telegraphy.

(Adj'd to Wednesday, Feb. 16, 10 a. m.)

WEDNESDAY, *Feb.* 16*th*—10 a.

Met pursuant to adjournment.

Present: Counsel as before.

27 X Q. I would call your attention to Mr. Warner's testimony, at the top of page 32, in which he says: "In the sounder the armature must have a definite adjustment with respect to the poles of the magnet. This is effected by means of stop-screws carried by the lever, and when once made need not be changed. In the exhibit sounders there is no means whatsoever of adjusting the torsional resistance of the flat piece of metal or spring on which the lever is pivoted. Any adjustment of the stop-screws which would effect the retractible resistance of the flat spring or torsional spring would so change the position of the armature with respect to the poles of the magnet as would make the sounder inoperative." Mr. Haskins says, page 10, in answer to X Q. 22: "Any retractible force which is constant on the armature of the telegraph sounder would make the sounder inoperative for the purposes for which it is designed." Did these statements escape your attention when you examined defendant's printed record?

A. In a general sense the operator has little need to vary the distance from the armature to the poles, after he has once set it to suit the circumstances of his case with regard to the strength of the current at the time of use or his own personal idiosyncracies. The defendant's witnesses specify no fixed distance between the poles and

armature as essential to the proper working of the instrument.

Moreover, the defendant, as I understand, manufactures such
39 sounders as those with which I experimented, and in those sounders I find means provided for easy and rapid adjustment by hand without any tools of the maximum and minimum distance intervening between poles and armature. A sounder is manufactured with special appliances for readily making and changing this adjustment. It seems absurd to say that they are intended not to be used. If a definite distance of any given number of thousandths of an inch, for instance, must necessarily be maintained between these parts at their nearest approach, the manufacturers would certainly employ a fixed stop, or, at least, one of a more permanent nature than that in the sounders produced to fix this distance once for all and remove the liability to change. The adjustment by the regulating screws varies the torsional power of the flat spring, at the same time varying the distance between armature and cores. In my experiments I found that I could by varying the adjustment of the screws make the sounder operative or inoperative. The 23rd X question asked whether the statement of the defendant's witnesses, Mr. Pope being named, was not to the effect that in substance the adjustment of the stroke of the armature lever is made when the parts of the sounder are first assembled and put together. The quotations just made in your question do not affect this point. I do not remember whether the particular passages quoted by you escaped my attention or not.

X Q. 28. You do not remember of having read the passages, then, do you?

A. I went through nearly the whole record and I have no specific recollection about those passages.

X Q. 29. Did Mr. Pope's answer to question 8, page 15, and particularly the passage, "It would be quite impossible to use such a sounder for commercial purposes. The variations which take place from time to time in the attractive force of the magnet, due to unavoidable fluctuations in the battery current, render it necessary to correspondingly regulate the tractile face—that is to say, the face of
the blow of the sounder lever in one direction to the action
40 of the magnet must bear a certain definite relation to the blow in the opposite direction produced by the recoil of the spring. When one changes the other must be changed also. This cannot be effected in the case of the sounder, as in the case of the key, by simply changing the relations of the stops H H^1 to the plane of the torsion spring, because the position of the magnet is fixed, and if the relation of the stop to the spring is altered the relation of the armature to the magnet, and consequently its effective force before the armature is altered," escape your attention?

A. I don't think it did.

X Q. 30. In the experiments, so called, with the sounders with the retractile springs detached did you use any tool—as, for example, a screw-driver or pliers—for regulating or adjusting the torsion or flat springs on which the armature levers are mounted?

A. I used no "so-called" screw-driver or pliers or anything else

to effect the adjustment of the torsion springs upon their posts. The adjustments were all effected by hand, and consisted exclusively in altering the positions of the two adjusting screws and in detaching and removing the spiral spring from one of the sounders.

X Q. 31. Are you aware that a single cell of bichromate batteries such as you used would have fifteen times the energy in watts of the battery usually employed in local sounder circuits?

A. My object, of course, was to determine the efficiency (before proceeding further I must request to be unmolested by any personal remark during the course of an answer, and will not submit to having the examiner interrupted while writing my answer. I shall refrain from soiling the record by placing on it any hint of the words just used by defendant's counsel) of the sounder as regards the strength of the torsional spring in overcoming the effect of the magnet, both as regards imparted and residual magnetism. My only fear was that I would not have sufficient attractive force of the magnet to put the matter to a severe enough test. I was not aware of the ratio between the volt-amperes which could be
41 revolved by a single cell of bichromatic battery compared with that which is used in the average local circuit. Taking the actual efficiency of the batteries I used, which depends on ampere turns as regards the magnet, I think the range of efficiences which I tried were sufficient to make an exacting test of the retractile power of the torsion spring when properly adjusted by the set-screws. If the counsel with apparently necessary prompting will state what number of cells, of what kind, and of what electromotive force and resistance, a more intelligible statement may result.

32 X. Q. I have requested you informally to confine your answers as far as possible to the questions. You have disregarded this request and I do not consider it a proper or honest way of answering. I now repeat my request upon the record and ask you further whether you know yourself the strength or energy of the batteries usually used in local circuits?

A. In local circuits I should think that from three gravity cells upward would do efficient work. I have not claimed to know the whole practical details of telegraphy. Speaking of the watts of a battery is very deceptive, as they vary with the resistance in the external circuit, and a battery which gave very low efficiency in watts on a circuit of very slight resistance compared with another battery of a higher efficiency of watts on a similar circuit might work to very much greater advantage on an external circuit of high resistance, such as furnished by many relays or sounders.

The strength of a battery in watts uncoupled with the knowledge of its internal resistance or with a statement as to whether that strength in watts is through high or practically no external resistance tells nothing of what the battery will do working through any given resistance, such as hundred ohms.

The counsel's ideas of honesty are quite immaterial to the issue. If the counsel objects to non-responsiveness he has his remedy in

entering such objection on the record. There is no necessity
42 for him to give, in the course of his questions, his own statement of what he says he has informally requested.

33 X Q. You are aware, then, as I understand you, that the energy of one bichromate battery used, as you used it in your experiment, would be from ten to fifteen times as great as the energy required in connection with a sounder? Is my understanding correct?

A. Your understanding is anything but correct. The energy evolved by the single bichromate cell through the resistance of the sounder, unless such sounder be of most deceptive appearance and unusual construction, would have nothing like such ratio to the electrical energy evolved under similar circumstances by large gravity batteries. The greater the electrical energy passing through the magnets the more exacting would be the trial of the efficiency of the torsional action of the spring. If it worked with fifteen times the usual battery power this would prove that *a fortiori* it would work with lower. If your ratio of fifteen to one were accepted as final I should consider that in trying the sounder with a still higher battery force would be making the trial still more rigid, as the watts or volt-amperes evolved by a battery depend on its internal resistance, which is affected by size. The mere naming of a battery by the solution employed is not a complete statement of its strength and resistance.

34 X Q. What is the resistance of a coil of the sounders?

A. One of the sounders is marked "Exhibit B Sounder, Western Electric Company," and on its bottom I find inscribed 4 ohms. The other is marked Complainant's Exhibit B, and I do not find its resistance marked upon it.

35 X Q. What was the strength of a single cell of bichromate battery connected in short circuit through the 4 ohms relay expressed in amperes?

A. I did not determine the strength of the battery. A safe figure to work by would probably be 1.5-10 volts E M F, and an internal resistance of one ohm. Applying these figures to a total external resistance of 4 ohms would give us an ampere strength of about $\frac{3}{10}$.

43 36 X Q. In the sounder do you find a circuit-breaking lever?

A. The sounder contains a lever perfectly adapted to act, as far as itself is concerned, as such. No circuit is provided for it to break, and the extraneous parts, such as binding posts and properly insulated contact points, are not provided. Owing to the metallic contact between the flat torsional spring and other parts, I should consider the lever peculiarly adapted to work and perform the functions of a circuit-breaking lever with the auxiliary parts suppressed.

37 X Q. Then, in your view of the case, the sounder exhibits infringe the first, second, and fourth claims of the patent, the same as the third. In other words, you consider that the words "circuit-breaking lever" in claims one, two, and four refer to the same de-

vice as the word lever in the second line of claim three, and that the term "circuit-breaking" should be disregarded in construing claims one, two, and four?

A. The question of infringement and construction of the claims rests with the court entirely. It is for the court to decide whether a lever, peculiarly well adapted by its connections to act as a circuit-breaking lever, is not for the purposes of construction of the patent a circuit-breaking lever, when the word circuit-breaking affects only a question of function, and of a few minor connections of the simplest description and understood by every electrical mechanic.

38 X Q. Is the lever mentioned in claim three illustrated in the drawing of the patent?

A. In the drawing of the patent a lever is illustrated, which is a lever that would come within the invention of the third claim.

39 X Q. By what letter is it designated?

A. In the drawing it is designated by the letter B.

40 X Q. As illustrated in the drawing, what is its function?

A. Its function is to move up and down, thereby twisting the torsion spring slightly; and one of its functions is to carry a contact point attached to the end of the screw H, which screw I
44 find represented by the screw in the relays nearest the armature and torsional spring, the end of which screw, with its point being clean, or, better, being provided with a platinum point, would act perfectly as a contact point.

41 X Q. Exhibit Old Style Western Union Key has a lever carrying two screws, the function of the lever and screws being to break the circuit, regulate the amplitude of the lever movement, and the retractile resistance of the spring. In view of this, will you state what substantial change, if any, was made by Edwards as disclosed by his patent?

A. In the Edwards patent the use of a torsional spring possessing certain peculiarities and adapted to perform certain functions, together with proper supports for the same, are the main features distinguishing the invention as contrasted with the Defendant's Exhibit Old Style Western Union Key.

42 X Q. In that the change made by Edwards consisted in pivoting the circuit-breaking lever upon the spring. Referring now to the Exhibit Pole-Changer, we find a torsional spring which performs the double function of a pivot and a retractile spring. Assuming, then, that the Exhibits "Pole-Changer" and "Old Style Western Union Key" were old, Edwards' invention, if any, consisted simply in substituting in the old-style Western Union key the torsional spring of the pole-changer, did it not?

A. It is not at all clear how the torsional spring, as you call it, of the pole-changer could be substituted for the pivot of the old-style Western Union key, the old-style Western Union key not being adapted to receive a torsional spring and it not being shown how the specific spring of the pole-changer could be inserted in its structure. The Edwards patent discloses a torsional spring of definite character, discloses a way of fastening that spring so as to make it operative. These points are not illustrated in the Exhibit Pole-

Changer or old-style Western Union key, it not being at all clear, as I have already said, how they could be combined.

43 X Q. Then do you wish to be understood as saying that
45 the Edwards patent is limited to his specific manner of attaching or mounting the spring upon the post, and that it was in this that the Edwards invention consisted?

A. You are continually asking me to perform the work of the court in construing a patent which is before it. The court has to decide upon the limits of the claim. In the first claim I find the elements to be the combination, with the circuit-breaking lever, of a torsional spring upon which said lever is fulcrumed. This contains no limitation to the specific manner of mounting the spring upon the posts and is in words for simply the two elements named.

(Recess until 2 p. m.)

44 X Q. It being old to fulcrum the circuit-breaking lever of a key upon trunnions or pivots, as disclosed in the "old style of Morse key," the "old-style Western Union key;" and a torsional spring being old, as disclosed in the "Exhibit Pole-Changer" and "Exhibit Adjustable Torsional Spring," what more, if anything, is disclosed as the invention of Edwards except the substitution of one well-known device for another device also well dnown?

A. Neither the "Exhibit Pole-Changer" nor the "Exhibit Adjustable Torsional Spring" show the spring of the Edwards patent. In neither of these is a spring possessing the characteristics of the Edwards spring shown; neither of the exhibits even shows a spring held immovably at both ends. Hence I do not find that an aggregation of the parts mentioned of the exhibits constitutes the Edwards invention.

45 X Q. By whom are you employed and paid for giving testimony in this case?

A. I was retained by Messrs. Briesen and Steele, acting as attorneys for the complainant.

46 X Q. Do you not expect to be paid by the New Haven Clock Co.?

A. I expect to receive my retainer and fees through Briesen
46 & Steele, acting as attorneys for the parties bringing this suit. I understand that such party is the New Haven Clock Co.

(Cross-examination closed.)
(Examination closed.)

T. O'CONOR SLOANE, *Ph. D.*

Subscribed and sworn to before me this 16th day of Feb., 1887.

SAM'L R. BETTS, *Examiner.*

(Complainant's case is closed.)

48 UNITED STATES PATENT OFFICE.

EDGAR A. EDWARDS, of Cincinnati Ohio.

Telegraph-Key.

Specification forming part of Letters Patent No. 270,767, dated January 16, 1883; application filed September 23, 1882. (No model.)

To all whom it may concern:

Be it known that I, Edgar A. Edwards, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful improvements in telegraph-transmitters, of which the following is a specification.

My invention relates to telegraph keys or instruments used for transmitting telegraphic signals, and is an improvement on the well-known Morse key, being in substituting for the trunnions or pivots upon which the lever vibrates a torsional spring or strip of metal.

(Here follows diagram marked p. 47.)

Figure 1 is a perspective view of a key embodying my invention. Fig. 2 is a plan view of the same. Fig. 3 is a perspective view of one side of the torsional metal spring. Fig. 4 is a plan view of the under side of the same. Figs. 5 and 6 are modifications of my improvement.

A represents the base of an ordinary telegraph-key, as the style known as the "legless" pattern.

B represents the lever carrying the contact-point, which point is secured in the end of screw H.

C represents binding-posts.

D represents a piece of metal, preferably spring-steel, but may be made of spring-brass or other suitable material. It is preferably made flat and thin to allow of a free torsional movement. This strip of metal is secured rigidly to lever B by rivets, screws, or any other desirable means. Spring or strip D is provided with holes *d* at its ends. Thumb-screws E′ pass through holes *d* and into posts E, thus firmly binding spring D to post E. This arrangement is made in order that lever B, with spring D, may be quickly and easily removed for cleaning the contact-points or other purposes.

D′ represents a rib of metal, secured by soldering or other convenient means to one side of spring D. This rib is designed to prevent any vertical movement of spring D.

H H′ represent adjusting thumb-screws for regulating the amplitude of movement of lever B. The ease of movement of lever B is regulated by adjusting thumb-screws H H′, so that spring D is placed under more or less torsional strain.

In the modification shown in Fig. 5 the lever is fulcrumed upon an angled torsion-spring, I′, which latter will of course have its ends secured in a suitable manner—such, for instance, as the spring shown in Figs. 1 and 2.

(No Model.)

La Rue)



Attest,
Jno. E. Stiles.
John L. Jones

Inventor,
Edgar A. Edwards
by Wood & Boyd
his Attorneys &c

In the modification shown in Fig. 6 the letter J indicates the lever, and J′ a tubular slitted torsion-spring, extending through the lever, and on which the latter is fulcrumed, said spring being attached to the lever, as shown. This form of torsion-spring will also have its ends suitably secured.

When a telegraph-key is constructed as herein described the side or lateral movement is reduced to a minimum. The adjustment of trunnion set-screws is obviated. The torsional metal springs will not wear out, but last indefinitely.

The adjusting-screws H H′ serve the purpose of regulating the amplitude of the lever movement, and also serve the purpose of regulating the retractile resistance of the torsion-spring. By this arrangement a secondary retractile spring to resist the downward movement of the contact-lever is not necessary. In ordinary telegraph-keys a retractile spring is always supplied to regulate the force required to depress the lever, as well as pivots or trunnions on which the lever vibrates.

In my invention the torsional spring not only takes the place of the pivots or trunnions, but, when used in connection with adjusting-screws H H′, takes the place of the ordinary retractile spring. The construction of the key is thus simplified and cheapened by discarding one of the hitherto necessary features—viz., the retractile springs.

I do not limit myself to the application of torsional springs to telegraph-keys alone, as it is obvious the torsional strip or spring may be applied to other electrical instruments. Thus it may replace the pivots or trunnion of the relay and sounder.

I claim—

1. In a telegraph-key, the combination, with the circuit-breaking lever, of a torsional spring upon which said lever is fulcrumed, substantially as described.

2. In a telegraph-key, the combination, with the circuit-
49 breaking lever, of a torsion-spring provided with the rib D′, said lever being fulcrumed on the spring, substantially as described.

3. The combination, in a telegraph-key, of the lever fulcrumed upon the torsional spring, with the adjusting-screws H H′, for regulating the amplitude of the lever movement and the retractile resistance of the torsion-spring, substantially as described.

4. In a telegraph-key, the combination, with the circuit-breaking lever, of a torsional spring upon which said lever is fulcrumed, the posts to which the spring is connected, and the screws E E′, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

EDGAR A. EDWARDS.

Witnesses:
JNO. E. JONES.
E. E. WOOD.

50 United States Circuit Court, Southern District of New York.

GEORGE W. LA RUE
vs.
WESTERN ELECTRIC COMPANY. } In Equity.

Testimony taken on the part of the defendant under and pursuant to the 67th rule in equity of the Supreme Court of the United States, as amended, before John A. Shields, Esq., a standing examiner of said court.

NEW YORK, *December* 2, 1886.

Present: George P. Barton, Esq., of counsel for defendant, and Antonio Knauth, Esq., of counsel for complainant.

JOHN A. SEELY, a witness called on the part of the defendant, having been duly sworn, testifies as follows:

My name is John A. Seely; age, 31; residence, New York city, and occupation, electrician for the Metropolitan Telephone and Telegraph Company of New York city.

(Counsel for defendant here offers in evidence an exhibit marked Pole-Changer.)

Witness continues: The Exhibit Pole-Changer is used by telephone companies for the purpose of ringing up subscribers. I have known them to be in use—a fac-simile to the exhibit—since 1881. We used the pole-changer of this construction in the office of the City and Suburban Telegraph and Telephone Company, Cin-
51 cinnati, Ohio, in the year 1881. The pole-changer that I used in 1881 was of identically the same construction as the exhibit, having the armature mounted upon a torsional spring, as here shown in the exhibit. Said pole-changer was in use in the office of the aforesaid company, corner of 4th and Walnut streets, Cincinnati. We had two pole-changers like exhibit constantly in use, the second one being an extra or auxiliary pole-changer. Both pole-changers were fastened to the wall in the battery-room in the building corner 4th and Walnut streets, and one was constantly in use and gave entire satisfaction, and the second one was sometimes used. The aforementioned pole-changers were seen daily by Mr. W. H. Eckert, now of this city, — Mr. E. A. Eckert, now of this city, both of whom at that time were officers of the City and Suburban Telegraph and Telephone Company.

Cross-examination:

The pole-changers were used first in October, 1881. I put them in. They are not of my own invention. The springs are made after a suggestion of mine. They are the invention of Elisha Gray. I should call the torsional spring in this exhibit the lower spring, which is vertical when the instrument is lying on the table. We continued to use the pole-changers as long as I was with the company, which was up to August, 1882. We then introduced them into practical use in New York, in the Metropolitan Telephone and

Telegraph Company, and have continued to use them since. The invention of Elisha Gray mentioned by me was the art of using a pole-changer to ring magneto-bells. It had nothing to do with the torsional spring, that I know of.

When I came to New York in 1882 I was general inspector of the Metropolitan Telegraph and Telephone Company.

JOHN A. SEELY.

Sworn to before me—

JOHN A. SHIELDS, *Examiner.*

52 CHARLES DARWIN HASKINS, a witness called on the part of the defendant, having been duly sworn, testifies as follows:

My name is Charles D. Haskins; age, 33; residence, Brooklyn, N. Y., and occupation, electrical engineer. I am in the employ of the defendant company and have been for quite a number of years.

(Defendant's counsel here offers in evidence a telegraph key, and the same is marked Defendant's Exhibit Old Style Morse Key, December 2, 1886, J. A. S., Ex'r.)

Witness continues: Keys on the principle of Exhibit Old Style Morse Key have been in use, to my own knowledge, twenty years.

Witness continues: I have before me four other exhibits, two of them being keys and two sounders. The keys are marked respectively Complainant's Exhibit E and Exhibit La Rue Key; the sounders are marked Complainant's Exhibit B and Exhibit Sounder Western Electric Company, respectively. These four exhibits were all made by the defendant company and I superintended the construction of them all. I superintended the construction of the two keys under the direction of Mr. La Rue, the complainant, who was present from time to time to see that I carried out his instructions, and were finally approved by him. My understanding is that these were made for Lytle & Co., who were licensees of Mr. La Rue. The defendant company, to my knowledge, has never made any keys similar to those before me except with the approval of Mr. La Rue. The sounders were designed by myself and constructed under my superintendence, and I have taken out a patent embracing the construction of these two sounders, designed and constructed under my superintendence, which patent I assigned to the Western Electric Company. This is the patent, No. 352,317, granted November 9, 1886, which I now produce.

(The patent is offered in evidence as Defendant's Exhibit Haskins' Patent, and it is stipulated by counsel for complainant that a printed copy of the specification may be used at final hearing in place of the original.)

Witness continues: More than five years ago I knew of torsional springs being used in mechanics in the place of a pivoted
53 shaft combined with a spiral spring; have seen them used in clocks in Bradford, Vermont. The spring consisted of a strip of flat steel, similar to a hoop-skirt wire, only thinner. It was sus-

pended rigidly at either end with a cross-bar fixed in the centre of the spring, on the end of which cross-bar were weights or balls, the action of this spring being torsional as the balls revolve first one way and then the other, this movement being maintained back and forth by the action of an escape-wheel in a clock in a well-known manner. This spring took the place of the balance-wheel, shaft, and hair-spring of the well-known marine clock movement. At the time I saw clocks of this description I was employed in the double capacity of apprentice in a country jewelry store and operator in a telegraph office, they both being in the same room, some of my duties being to clean and repair clocks and other time-pieces. The jewelry store was owned at that time, as it is also now, by J. M. Warden, who was manager of the telegraph office at that time, as he also is now. I was in his employ in 1867 and 1868 and again in the latter part of 1869. I was not employed continuously there in those years. I cleaned the clocks with the torsional springs referred to as early as 1869. I have in mind another use of the torsional spring in the shape of a door spring, one end of the steel rod or wire being fixed to the wall and the other end fixed on the side of the door near where it is hinged. This rod had means of adjusting the torsional power of the spring by means of notched wheel rigidly fastened at one end of the rod, in one of which notches the pawl was placed. I knew of such door spring being used twenty years ago, in Bradford, Vermont.

I have examined and have superintended the manufacture of the Exhibit Pole-Changer and understand it. There is a torsional spring in this pole-changer, its function being to act in the place of a shaft, its quality as a spring being merely passive. Were it replaced by a shaft through the lever pivoted at either end, no spring would be required. Pole-changers have been made without the use of retractile springs on either side and without torsional springs, as there is no occasion for either in a pole-changer of this character.

In this pole-changer the torsional spring acts principally in
54 the capacity of a flexible support for the armature and lever.
As the pole-changer is in vibration the torsional spring is twisted first one way and then the other, just as a shaft would revolve first one way and then the other were the armature pivoted on a shaft. As the pole-changer is in vibration and the torsional spring is moved back and forth it aids the movement of the armature. The torsional spring normally, when no current is on, makes each end of the armature equidistant from either pole of the magnet. When the armature is attracted in one direction the spring is twisted slightly. When the polarity of the electro-magnets changes, the torsional spring, having been twisted, has a tendency to resume its normal position, and hence aids the release of the armature from that side of the electro-magnets and assist its movement to the other side, and thus the torsional spring aids in keeping the armature in vibration.

The key before me, marked Complainant's Exhibit E, consists of a steel lever riveted to a flat steel spring. It differs from the Exhibit Old Style Morse Key in that the flat spring in Exhibit E takes

the place of the steel shaft through the lever of the Exhibit Old Style Morse Key. Incidentally, it also acts in such a manner as to dispense with the use of brass spiral springs which is used in the Exhibit Old Style Morse Key. One of the earliest forms of Morse key was a simple strip of flexible sheet brass or other metal fastened rigidly to a table or wooden base at one end and the other end being free to move by a pressure downward, that movable end coming into contact with the other terminal of the circuit, this action being simply the action of any piece of flexible metal when bent. This brass strip springs upward when the pressure is removed, thus breaking the circuit. In this form of Morse key the lever itself is the spring and no other spring is used. I have seen this style of key in use for over twenty years, and this morning saw one among the original Morse instruments on exhibition in the show-case in the receiving-room of the Western Union Telegraph Company's building in New York, at 195 Broadway. Such keys are a matter of common knowledge among telegraph men.

55 Cross-examination:

C. Q. 1. When did you make or superintend making the key, Exhibit E?

A. It was before the making of the sounders like Exhibit B.

C. Q. 2. How long before was it?

A. A few weeks before.

C. Q. 3. And then you contrived the instrument, Complainant's Exhibit B?

A. Yes.

C. Q. 4. Is the patent No. 352,317 the patent under which the defendant company makes the sounders like Exhibit B?

A. This exhibit is an exact reproduction of the patent, or, rather, the patent is just like the exhibit.

C. Q. 5. You state in your specification of that patent that the invention has been described in connection with a telegraph sounder, but it is evident that the torsion spring may be applied to the armature lever of any telegraphic receiving instrument or to the lever of any telegraphic key without departing from the spirit of the invention. To what key did you wish to refer by this statement?

A. To any Morse key to the lever of which the torsional spring is attached in the manner set forth in the drawings and specification of the patent.

C. Q. 6. Could a spring be attached in the manner shown in the patent to a key like Exhibit E?

A. The lever of the key, Exhibit E, is of such a shape that a slot sufficiently deep to receive a suitable flap-lip or projection would weaken the lever. By making the lever heavier or thicker, in order to cut a slot sufficiently deep to receive the lip or flap, you could attach the spring in the Exhibit E in the same manner as shown in the patent.

C. Q. 7. I call your attention to the first claim of your patent,

which is for "the combination, with a lever and means for opering the same, of a supporting torsional spring having a lip extending from the same entering a slot formed in the lever, substantially as described." A telegraph key with your spring entering a slot in it as indicated in your last answer would then involve the invention of the first claim of your patent?

56 (Objected to as calling for opinion of witness upon patent law, the witness not having been offered or qualified as a patent expert.)

A. That would involve the invention of the first claim.

NEW YORK, *December* 3, 1886—10 a. m.

Met pursuant to adjournment.

Present: Counsel as before.

Cross-examination of the witness HASKINS resumed:

C. Q. 8. I notice that in the opening clause of the specification you state that "the object of the invention is to provide convenient means for supporting the armature and armature lever," etc., while in the claim you only speak of a lever. Is, in your opinion, the lever of the key an equivalent of the armature lever?

A. Both of them are levers, but the instruments they are used in are of entirely different character, the levers performing different service in each case.

C. Q. 9. But for the purposes of your patent it is immaterial, as I understand you, whether the spring is fixed to an armature lever or to a telegraph key lever?

A. I should think that it is evident that the patent answers that question.

C. Q. 10. How does it answer the question?

A. Lines from 73 to 79 answer that question.

C. Q. 11. Who uses these sounders which your company manufactures with the torsional spring?

A. Our company does not manufacture them. I have no knowledge on the subject. I don't know who uses those that we did manufacture.

C. Q. 12. Would the Exhibit Pole-Changer operate just as successfully as it does without the torsional spring on which the armature is mounted, supposing that the armature is properly mounted on pivots?

A. Pole-changers mounted on pivots are in successful operation at present.

C. C. 13. What is the motive-power in the pole-changer which causes the armature to regain its normal position when the
57 current is interrupted?

A. In the Exhibit Pole-Changer the force which brings the armature to its normal position upon the interruption of the circuit is principally the strength of the pole-changing contact springs placed on each side of the vibrating rod, assisted slightly by the action of the so-called torsional spring underneath.

C. Q. 14. How does the torsional spring in the pole-changer compare in its operation and effect with the torsional spring in Exhibit Sounder Western Electric Company?

A. In both of them their chief function is a cheap mechanical means of supporting a vibrating or oscillating lever, doing away with trunnions and pivot screws.

C. Q. 15. You will notice that in the Exhibit Sounder the armature is held in a horizontal position above the magnets when the current is off; what holds it in that horizontal position?

A. Since its manufacture the torsional spring has been set, either through some violence or accident, so that its strain is such as to raise the lever in the manner described by you.

C. Q. 16. Please point out, if you can, what signs of such setting you find in the exhibit.

A. In the manufacture of these sounders I experimented to obtain the best results, which I found to be when the torsional spring supporting the lever was simply passive, allowing the armature to lay with its own weight on the magnet, depending wholly on the retractile spiral spring underneath to produce the upward movement of the lever, and I instructed the workman to so adjust them when he assembled the parts. My reason for supposing that the Exhibit Sounder Western Electric Company referred to had been changed as to the set of the spring is that I assumed the workman did as instructed.

C. Q. 17. Then you do not find any marks of violence on the instrument, and your supposition that it has been changed is only a general one, from the instructions which you gave your workmen?

A. It is quite possible to drop one, even without making any marks of violence, which would change the set of the spring, or a pressure by the thumb on the top of the spring might easily change the set of the spring. I don't wish to be understood as supposing that it was designedly changed, as I have seen several of the
58 instruments accidentally changed as to the set of the spring. In fact, that is the principal defect of the sounder, that they don't remain set in any particular place. There isn't any mark of violence on this one, and there need not necessarily be to change it.

C. Q. 18. Did you examine the Exhibit Sounder Western Electric Company before it was delivered to complainant's counsel?

A. I have no means of identifying any sounder delivered, as it would be impossible for me to examine each individual instrument that is manufactured under my superintendence, having to depend upon subordinates to see that instruments are manufactured as instructed.

C. Q. 19. The instrument, Exhibit Sounder, now before you has the coil detached at present. Is that sounder an operative instrument in this condition?

A. Strictly speaking, no; for the reason that a sounder should have means of varying the retractile force in proportion to the varying condition and power of the battery which supplies the electrical energy for its operation. It is conceivable, however, that it might happen to be placed in a circuit where the current might be just

sufficient for it to work well when in its present state of adjustment; but when the battery grew either stronger or weaker, as it certainly would, it would cease working properly, as the retractile force would necessarily have to be changed to conform to such variations as the current would undergo, and there being no means of adjusting the retractile force without the use of the retractile spiral spring underneath or its equivalent, the sounder would become inoperative.

C. Q. 20. Didn't you state that the degree of retractile force exhibited by the spring was a matter of adjustment of the same on the lever?

A. I have made no statement by which I desired to be understood that there was any means of readily varying the retractile force of the torsional spring to which the lever is fastened, the brass spiral spring underneath performing that office.

C. Q. 21. Do you mean to say that this torsional spring D cannot be adjusted in such a manner that the instrument will be operated without the use of the coiled spring?

A. The torsional spring D cannot be so adjusted that the sounder will work under all the varying conditions that an ordinary
59 Morse sounder is subjected to without the use of some adjustable device to vary its retractile force. In the present instance this adjustable device is the spiral spring underneath.

C. Q. 22. But still the torsional spring may be adjusted so that the instrument will be operative without the use of a coiled spring, may it not?

A. Any retractile force which is constant on the armature of the telegraph sounder would make that sounder inoperative for the purposes for which it is designed.

C. Q. 23. Then you referred to an instrument which to your knowledge was inoperative when you stated in the specification of your patent, lines 56 to 58, "The lever is preferably not dependent for its retractile force upon the spring D, although it may be so, but is assisted by a coil spring, E?"

A. The reference to an instrument wholly dependent for its retractile force upon the torsional spring D was associated in my mind with some device, of which there might be many, by which the retractile force of the torsional spring might be made variable. Under such conditions the retractile spiral spring underneath might be dispensed with.

C. Q. 24. And these means of adjusting or varying the retractile force of the torsional spring was so well known that you did not deem it necessary to refer to them in making that statement?

A. I did not deem it to be necessary to be very particular in the specification about things that did not relate pointedly to the claims which I desired to obtain, namely, the method of attaching the armature lever to the supporting spring.

C. Q. 25. In your answer to Q. 23 you state that you had in mind some device, of which there might be many, by which the retractile force of the torsional spring might be made variable. To what devices do you refer in your answer?

A. The device I had in mind was means of varying the plane

of the torsional spring at the two extremities where it is fastened to the supports.

C. Q. 26. Was there anything new in thus adjusting a torsional spring or was it a matter of common knowledge among mechanics?

A. It was new to me.

C. Q. 27. Was there any other means known to adjust the torsional spring than the one pointed out by you?

60 A. I can conceive of several ways, and I presume that other people could conceive of the same.

C. Q. 28. Do you mean that the adjustment is simply a matter for the mechanic who makes the instrument?

A. No.

C. Q. 29. What do you mean, then?

A. I mean that it is a matter for the man who designs the instrument or invents it and not for the mechanic.

C. Q. 30. Do you claim that there was any invention in the manner in which you fastened and then adjusted the torsional spring upon the posts B and B^2 by the screws b^1 b^2?

A. I don't remember what I claimed more than there is in the patent, but I was only allowed those claims contained in the patent.

C. Q. 31. Question repeated.

A. I disclaim anything that is not claimed in the patent before you.

Redirect examination:

R. D. Q. 32. Look upon the spring-lever key now shown you and state when, if ever, you knew of such keys being made and used.

A. I know of such keys as that now before me being in use for more than fifteen years. I personally superintended the manufacture of such keys earlier than 1876. They were known and generally in use wherever a cheap telegraph key was required at that time. I knew of their being used in New York and Boston.

(The key referred to is offered in evidence and marked Defendant's Exhibit Spring Lever Telegraph Key, December 3, 1886, J. A. S., Ex'r.)

CHAS. D. HASKINS.

Sworn to before me—

JOHN A. SHIELDS, *Examiner.*

FRANK L. POPE, a witness called on the part of the defendant, having been duly sworn, deposes and says:

Q. 1. Please state your name, age, residence, and occupation.

A. Frank L. Pope; age, 46; residence, Elmora, N. J., and by occupation a solicitor of patents and expert in patent cases.

61 Q. 2. State briefly, if you know, some of the forms of telegraph keys and sounders that were in general use more than five years ago.

A. I am familiar with all or nearly all the different kinds of telegraph keys and sounders which have been in use for the last twenty-five years. The telegraph key, so called, consists in all cases of an

oscillating or vibrating lever, which is made to open and close an electric circuit. It is provided with a knob or handle, by means of which it is depressed by the finger of the operator and is usually raised by a retractile spring, the latter being sometimes, but not often, dispensed with. The circuit-breaking lever is mounted upon a fulcrum and the motion of the lever is limited in one direction, and sometimes in both, by adjustable stops. Sometimes the key lever or the circuit-breaking lever of the key has been mounted upon trunnions or pivots, and sometimes upon a spring which is bent or flexed when the key is depressed. Several different forms and modes of application of such springs have been known and used. The sounder is an instrument employed for receiving the signals made by the key. It consists of a lever movable like that of the key upon a fulcrum, and it moves to and fro between adjustable stops. Its function is to reproduce or repeat the movements of the key-lever at a distant point. The lever of the sounder is not provided with a circuit-breaker and has no use for one. In place of a knob or handle it carries an iron armature and is moved in one direction by the attraction of a small electro-magnet and in the other by a retractile spring. In some forms of sounders which have long been in use the spring is dispensed with and the lever is moved in both directions by the action of the electro-magnet. The lever of the sounder has also been mounted upon trunnions or pivots and upon different kinds of springs variously arranged and applied in such a manner as to serve as a fulcrum. In 1860 I was a telegraph operator at Mount Vernon, Westchester county, New York, and at that time used in my daily business a sounder of a form more or less common at that date, which had its armature lever fulcrumed upon a spring. Other instruments, such as relays, were also in use at that date, having their armatures fulcrumed upon springs. Many
62 of these relays were in use at that time on the Washington and New Orleans line, and I had one of them for a long time in my possession which was captured by the Federal troops at New Orleans during the war of the rebellion, and was given to me as a curiosity by Colonel C. S. Bulkley in 1864.

Q. 3. Look upon the Edwards patent now shown, No. 270,767, of January 16, 1883, marked Exhibit A, and state whether you have examined and understand the invention and devices therein described and claimed.

A. I have examined the patent and think that I understand it.

Q. 4. Please examine Exhibit La Rue Key and the key marked Complainant's Exhibit E, now shown you, and compare the same with the said paient, and state whether or not said exhibits correctly represent the device described and claimed in the Edwards patent, Exhibit A.

A. The exhibits, in my opinion, embody the invention described and claimed in the patent, more especially that modification shown in figure 5.

Q. 5. Referring to claim 3 of the patent you will note that a lever is mentioned as an element thereof and also adjusting screws. Please describe the function of said lever and the function of said

screws, as claimed in the third claim of the patent, without reference to the prior existing state of the art.

A. The sole function of the lever mentioned in the claim is to alternately close and break the electric circuit when moved by the hand of the operator, which is done by means of a device attached to it called the contact point. The function of the adjusting screws is to regulate the amplitude of the vertical oscillations of the lever when closing and breaking the circuit, so that the amplitude will not be too great for convenient and rapid manipulation, but will still be sufficient to prevent the passage of a spark when the key is raised, the proper amplitude being easily determined by trial.

Q. 6. Another function of the said adjusting screws is mentioned in the claim. Will you please state it?

A. Yes; I had intended also to say that the same adjusting screws perform the additional function of varying within certain limits the retractile force or rather resistance of the spring upon which the lever is fulcrumed.

Q. 7. Look upon the sounders marked Complainant's Ex-
63 hibit B and Exhibit Sounder Western Electric Company, and state whether you have examined and understand said exhibit sounders, and compare said exhibits with the Edwards patent, Exhibit A, and state whether or not you find in the sounder exhibits the invention claimed in the patent, and give your reasons for any opinion you may express.

A. I have examined the exhibits referred to and believe that I understand the construction and mode of operation of the same. In my opinion, the invention set forth in the claims is not found in the exhibits. In each of the claims of the patent, with the exception of the third, the circuit-breaking lever of a telegraph key is explicitly mentioned as one of the elements of the combination. The exhibits are sounders and not keys. Key is a term which in telegraphy is never applied to any device except a circuit-breaking device, and, properly speaking, to a device containing a circuit-breaking lever moved by the hand of an operator. The sounder resembles the key in that it has an oscillating lever moving upon a fulcrum. The function of said lever is, however, wholly different. It is to strike alternately against two stops and to produce an audible sound. It is moved by different means, namely, an electromagnet instead of the hand. It requires a different adjustment, inasmuch as the retractile spring must not only serve to lift the weight of the lever, but to overcome also the attraction of the remnant magnetism after the circuit through the magnet is broken. It requires a much more powerful and quick retractile action than does the key. The third claim of the patent is for a combination of which one of the essential elements is the lever of a telegraph key, and this of necessity must be understood to be a circuit-breaking lever; otherwise the device would not be a key, but something else. I cannot therefore understand that the term "lever" in the third claim has any other or different meaning than the term "circuit-breaking lever" in the other claims. In my opinion, the claims must properly be construed to refer to a circuit-breaking key lever,

because if they are construed to include the movable lever of other electrical instruments, as suggested in the last paragraph of
64 the specification, it would include apparatus known and in public use before the date of the patent, such as Thompson's torsion electrometer and the magnetic pole-changer commonly used in telephone exchanges, which, although in the fullest sense electrical instruments, are not keys, nor are they adopted to perform the functions of keys by transmitting signals over a telegraph line when moved by the hand of an operator.

Q. 8. I call your attention to the adjusting screws mentioned in the third claim as a necessary element. State whether you find in the sounder exhibits adjusting screws for regulating the retractile resistance of the spring upon which the lever of the sounder is mounted.

A. I find two adjusting screws having a relation to the lever of the sounder similar to that of the screws H H′ to the lever of the key in the patent, but in the sounder they do not practically have any effect upon the retractile force applied to the lever. The range of adjustment obtained in this way is too small and the recoil of the torsion spring too weak and sluggish in its action to be of any practical use in a sounder. The resistance offered to the upward movement of the lever by the remnant magnetism is so great that it is necessary to make use of a special retractile spring capable of a quick and energetic recoil, and this essential device forms a part of each of the exhibits sounders. A sounder like the exhibits and not provided with the spiral retractile spring or some proper equivalent therefor, and depending for its recoil solely upon the torsion spring, which constitutes the fulcrum of its lever, would be of little or no utility. While audible signals might possibly be produced upon such an instrument, they would be extremely feeble and uncertain and could not be produced with any reasonable degree of rapidity. It would be quite impossible to use such a sounder for commercial purposes. The variations which take place from time to time in the attractive force of the magnet, due to unavoidable fluctuations in the battery current, render it necessary to correspondingly regulate the retractile force—that is to say, the force of the blow of the sounder lever in one direction, due to the action of the magnet, must bear a certain definite relation to the blow in the opposite
65 direction produced by the recoil of the spring. When one changes, the other must be changed also. This cannot be effected in the case of the sounder, as in the case of the key, by simply changing the relation of the stops H H′ to the plane of the torsion spring, because the position of the magnet is fixed, and if the relation of the stops to the spring is altered the relation of the armature to the magnet, and consequently its effective force upon the armature, is altered also. This alteration does not matter in the case of a key, because the position of the hand of the operator is not fixed, and it may readily follow the key lever to its new position; but with the spiral retractile spring of the exhibit sounders or with any other device equivalent thereto the retractile force may be

varied to any extent without necessarily affecting the relation between the electro-magnet and its armature.

Adjourned to Friday, December 3, 1886, at 10 a. m.

The direct examination of FRANK L. POPE continued:

Q. 9. Please examine Exhibit Pole-Changer, Exhibit Old Style Morse Key, and Exhibit Spring Lever Telegraph Key and compare the devices therein shown with the devices described and claimed in the Edwards patent, Exhibit A, and, assuming that the said model exhibits were old at the date of the Edwards invention, give your opinion as to the alleged invention claimed in the Edwards patent.

A. Considering first the Exhibit Pole-Changer, I find in this an apparatus which is in one sense a key, and in another sense a receiving instrument—that is to say, it has an oscillating lever to which is attached a double-acting, circuit-breaking device whereby signals are transmitted through an electric circuit, but it differs from the telegraph key proper in that its vibrations are produced by an electro-magnet instead of by the hand of an operator. The lever of this apparatus oscillates between fixed points, and is fulcrumed upon a torsional spring, the action of which upon the lever is identical with that of the torsion spring of the telegraph key lever described and shown in the patent. I recognize each of the Exhibits Old Style Morse Key and Exhibit Spring Lever Telegraph Key as old devices for many years well known in the art. In Exhibit Morse Key the lever is fulcrumed upon trunnions and is provided
66 with volute compression spring, which is made adjustable and serves to lift the lever. In the Exhibit Spring Lever Telegraph Key the lever and the spring are formed of a plate of spring steel, the broadest transverse portion of the same being secured to a solid bearing, so that the portion of the key just in front of the bearing serves as a spring, it being bent when the key is depressed and restoring the same to its original position when the pressure is withdrawn. In addition to the exhibits shown me, I may also add that it was very common to use other forms of springs in connection with the old-style Morse key in use ever since 1844. Among these different kinds were flat, straight springs placed longitudinally and horizontally between the key lever and its base, U-shaped springs made of stiff wire and placed in the same position, and spiral springs placed above the key lever, all of which had for their only means of adjustment the variation in the play of the key lever by the adjustable screw stop or stops. The independent adjustment for the key spring such as that shown in Exhibit Old Style Morse Key and equivalent devices was not brought into use until some twenty years after the invention of the original key. Considering, therefore, that various kinds of spring had been long known and used having no means of adjustment other than by altering the play of the key lever or its normal position of rest with reference to the fixed base, and considering that a torsion spring had been used in connection with a circuit-breaking lever as in Exhibit Pole-

Changer, I am of the opinion that little, if any, invention was shown in substituting the tension spring of the pole-changer in a perfectly analogous position in connection with the lever of a hand key. The pole-changing apparatus, it is true, does not admit of the torsion being adjusted by altering the position of the set-screws which limit the motion of the lever, while in the patentee's key it does permit of such adjustment; but that is a necessary consequence arising from its substitution in lieu of one of the old forms of spring, which under the same circumstances had the same capacity. The torsion spring in Exhibit Pole-Changer performs precisely the same function in relation to the lever that it does in the patent—that is, it acts both as a fulcrum and as a retractile spring; but inasmuch
67 as in the pole-changer as in the defendant's sounder it is necessary to overcome the opposing force of the remnant magnetism, a supplementary retractile spring is added to the torsion spring. This additional spring is omitted because not necessary in the key of the complainant's patent.

Q. 10. Please compare Exhibit Pole-Changer with the Sounder Exhibit "B" and "Sounder Western Electric Co." and point out some of the similarities between the pole-changer exhibit and the sounder exhibits.

A. The pole-changer exhibit and the sounder exhibits are alike in having an oscillating lever fulcrumed upon a torsion spring moving to and fro between stops by the action of electro-magnets upon an armature. They are also alike in having a retractile spring for withdrawing the armature from the magnet upon the cessation of the current. In the pole-changer the magnetic attraction acts alternately in each direction, while in the sounder it acts in one direction only. For this reason the retractile spring of the sounder is made comparatively strong, and is also made adjustable to compensate for variations in the current. It is unnecessary to provide such adjustment in the case of the pole-changer, because the same strength of current, be it more or less, acts alternately in each direction. The defendant's sounder more nearly resembles the pole-changer in these particulars than it does the key of the complainants' patent; the capacity for adjusting the torsion of the spring by means of the set-screws, while it may to a certain extent exist in the sounder, is of no utility, and hence it is essential to do exactly what has been done in the pole-changer, namely, to provide a supplementary retractile spring.

Q. 11. Mention some of the places in which you knew of the use of spring-lever keys more than ten years ago.

A. The very first keys used by Morse at Baltimore and Washington, in 1844, were of this kind, and one of the identical keys is now on exhibition in a glass case at the Western Union telegraph office in this city. About 1872 and 1873 I myself manufactured and sold many hundred keys of this kind, the lever and spring being stamped integrally from one piece of metal.

68 Cross-examination:

C. Q. 12. If I have understood you correctly, all the claims of the

patent in suit, and especially the third claim, must properly be construed to refer to a circuit-breaking key lever, and that you do not find a lever of that character in the Complainant's Exhibit B and Sounder Western Electric Company, and for that reason you do not find that these two exhibits infringe the third claim of the patent nor any other claim thereof. Is that correct?

A. Yes; that is my opinion.

C. Q. 13. What instrument is Thompson's torsion electrometer, to which you have referred on your direct examination?

A. It is an instrument employed for measuring the attraction between two statically electrified surfaces—a laboratory instrument.

C. Q. 14. Why is it that, in your opinion, the third claim of the patent in suit would include apparatus like Thompson's torsion electrometer and the Exhibit Pole-Changer, if that claim was not to be confined to the circuit-breaking lever?

A. Because both of these are electrical instruments. The Thompson instrument has no circuit-breaker of any kind, and the pole-changer is not, strictly speaking, a telegraph key. It has, however, a circuit-breaking lever and in that sense may be regarded as a key. The term "key" is ordinarily understood to be limited to a device manipulated by the hand. The last paragraph in the specification says that the invention is not limited to keys, but may include electrical instruments generally.

C. Q. 15. Then, in your opinion, the pole-changer and Thompson's torsion electro meter contain all the material elements, or their equivalents, of the third claim of the patent, excepting the circuit-breaking character of the lever mentioned therein?

A. No; I would not go so far as that. Neither of them contain adjusting screws H H^1 or their equivalent having the double function of regulating the amplitude of the lever movement and the retractile action of the spring.

C. Q. 16. Do you wish to correct or modify your statement, then, made upon your direct examination, which is as follows:

69 "In my opinion, the claims must properly be construed to refer to a circuit-breaking key lever, because if they are construed to include the movable lever of other electrical instruments, as suggested in the last paragraph of the specification, it would include apparatus such as Thompson's torsion electrometer and the magnetic pole-changer"?

A. The statement should be modified as regards the second and third claims, as each of them include an element other than the circuit-breaking lever, which is not found in the electrometer or the pole-changer.

C. Q. 17. Then the pole-changer if new and made after the date of the patent would not be an infringement of the second and third claims of the patent, would it?

A. I think not.

C. Q. 18. Would it, in your opinion, be an infringement of the second and third claims if a party should use the key Exhibit E, but retain in it the volute compression spring exhibited in the old-

style Morse key and thus use both springs—the torsional spring and the compression spring—in the same instrument?

A. The question is a somewhat difficult one, for the reason that the patentee expressly explains that one of the principal objects of the invention is to simplify and cheapen the key by discarding one of the features before necessary—that is, the retractile spring; and in the third claim he, in effect, claims a combination such as will perform this double function. The volute spring when thus added would, so far as I can see, be of no utility whatever and would not perform any function not already performed by the torsional spring. If, therefore, the key was otherwise like that set forth in the second and third claims I should incline to the opinion that it would be an infringement.

C. Q. 19. Would not the volute spring assist the torsional spring in lifting the lever again?

A. Certainly, but the assistance would be entirely superfluous.

C. Q. 20. What is the principal moving power in the Exhibit Pole-Changer which restores the armature to its normal position when the current is interrupted?

A. The flat retractile spring between the coils and parallel to them.

70 C. Q. 21. Is that a torsional spring?

A. It is not, at least in the sense in which that phrase is used in the patent.

C. Q. 22. Is it the office of the flat piece of metal which is attached to the armature and stands vertically when the instrument lies on the table anything else but to serve as a flexible support for the armature?

A. I do not think it is depended upon for any other purpose than to form a supporting fulcrum for the armature and lever. It undoubtedly exerts some retractile force, but not enough to make the instrument operate in the way it is designed to.

C. Q. 23. What is the gist of the invention contained in the Edwards patent in suit?

A. It appears to be the substitution in a known form of telegraph key of a particular form of spring, which serves the double purpose of a supporting fulcrum and a retracting device, in lieu of other forms of springs which had before been used in similar keys to perform the same functions.

C. Q. 24. Now, please examine, if you have not already done so, patent No. 352,317, under which the defendant's sounders are manufactured.

A. I have examined the patent referred to and I understand it.

C. Q. 25. What is the gist of the invention described in that patent?

A. The gist of this invention appears to be the combination, with the movable lever, such as is used in telegraphic apparatus, of a particular form of torsional spring secured to the lever in a specific manner.

C. Q. 26. Is that spring, in its mode of attachment, confined to telegraph sounders, or is it applicable also to telegraph keys?

A. According to the terms of the specification, it is applicable to sounders or other receiving instruments as well as keys.

C. Q. 27. Then the lever of a telegraph key, so far as that patent is concerned, would be an equivalent of the lever bearing the armature of the sounder shown in the patent?

A. Yes.

C. Q. 28. But in the patent in suit one would not be the equivalent of the other?

A. Apparently not, as the terms of the claims expressly limit them to keys and circuit-breaking levers, while in the patent inquired about at least one of the claims is not so limited.

C. Q. 29. Is not the torsional spring described in the Has-
71 kins patent substantially the same spring as that described in the patent in suit?

A. The general construction is similar, in that each is a torsional spring with a right-angled rib attached to the central part of the same. The only difference which is particularly to be noted is the manner in which the spring is secured to the lever, and this different method of fastening is essentially what constitutes the improvement described in the Haskins patent.

FRANK L. POPE.

Sworn to before me—

JOHN A. SHIELDS, *Examiner.*

WILLIAM J. ARMSTRONG, a witness called on the part of the defendant, having been duly sworn, deposes and says:

My name is William J. Armstrong; age, twenty-seven; residence, Brooklyn, and I am in the employ of the defendant company. I have been familiar with the business of the company for six years. No keys like Exhibit E or Exhibit La Rue Key have been made or sold by the defendant company except one lot of 500 made for and sold to Lytle & Co. on their order, and made under the direction and with the consent of the complainant, as I understood, and I saw complainant in the shop of defendant company, from time to time, inspecting the work.

W. J. ARMSTRONG.

Sworn to before me—

JOHN A. SHIELDS, *Examiner.*

Defendants rest.

(Complainant's counsel, in view of the fact that the time to take testimony will expire on December 6, 1886, requests defendant's counsel to extend complainant's time to take rebuttal testimony for a suitable period.)

(Defendant's counsel states on the record that, owing to the refusal of complainant's counsel to accept service of notice or to stipulate for the examination of witnesses in Chicago, in accordance with
a previous verbal understanding that defendant's Chicago
72 testimony was delayed about two weeks; that defendant is anxious to have the testimony finished, so that the case may be ready for final hearing at the earliest possible date; that he is

here ready to attend the examination of complainant's witnesses in rebuttal, but that he will not consent to an extension of time for complainant to close his proofs, and especially as it does not appear that the time remaining is not sufficient.)

STATE OF ILLINOIS, } ss:
County of Cook, }

United States Circuit Court, Southern District of New York.

GEORGE W. LA RUE
vs.
WESTERN ELECTRIC COMPANY. } In Equity.

Met, pursuant to the annexed notice, at room 31, Maller's building, 228 La Salle street, Chicago, this 12th day of January, 1887, at 11 o'clock a. m.

Present: Antonio Knauth, of Briesen & Steele, on behalf of complainant, and George P. Barton on behalf of defendant.

Depositions of Ernest P. Warner and Enos M. Barton, Witnesses Produced on Behalf of Defendant.

ERNEST P. WARNER, a witness produced on behalf of the defendant, being duly sworn, deposes and says in answer to questions propounded to him by GEORGE P. BARTON, Esq., solicitor for defendant, as follows:

Q. 1. What is your name, age, residence, and occupation?

A. Ernest P. Warner; age, thirty-six years; residence, 126 Goethe street, Chicago, Illinois. I am employed by the defendant company at 227 South Clinton street, Chicago, as an electrical engineer.

Q. 2. What has been your business for the last fifteen or twenty years?

A. It has been confined chiefly to making electrical experiments and to the manufacture of electrical instruments.

73 Q. 3. Do you understand telegraphing by the Morse code?

A. I do.

Q. 4. State whether or not you have had occasion to examine letters patent and patented inventions as a part of your business; and, if so, to what extent.

A. I have frequently made such examinations, with a view of ascertaining the general character and scope of patents, during the past twelve years.

Q. 5. State whether you have examined the Edwards patent, number 270,767, of January 16, 1883; and, if so, state whether you understand the said patent and the invention therein claimed.

A. I have examined the patent mentioned and, I think, fully understand the invention claimed therein.

Q. 6. Look upon Exhibit "La Rue Key" and compare the same with the patent and state how the same compares with or differs from the key described in the Edwards patent.

A. The Exhibit "La Rue Key" differs slightly from that de-

scribed in the patent in two particulars: First, in having the stiffening brace or rib attached to one edge of the flat spring which supports the circuit-breaking lever instead of in the center of its width, as shown in the patent; second, in having the rivets used to secure the circuit-breaking lever to the flat spring placed in a line at right angles to that of the aforesaid lever. I see no other material points of difference.

Q. 7. Describe some of the telegraph keys with which you were familiar ten or fifteen years ago, and illustrate by models, if you so desire.

A. I am quite familiar with the construction of the telegraph key in common use as far back as 1862 or '3, and remember distinctly the form of key used by the Western Union Telegraph Company in 1865. It was at that time known as the "Western Union key," and was manufactured at Ottawa, Illinois, in the factory of the Western Union Telegraph Company. Its construction was a straight brass lever having a steel shaft passing through it at right angles, with adjustable center screws passing through, supporting posts on each side of the lever, the ends of said screws being pierced to admit the pointed ends of the steel shaft and thus provide a fulcrum upon which the lever could be turned.

74 At one extremity of the lever was an adjustable stop-srew, and at the other a button of horn or other non-conducting material, upon which the hand of the operator rested when transmitting signals. The lever was also provided with a platinum point on its lower side, so placed as to make contact with another platinum point supported on the base whenever the key lever was depressed. Normally these platinum points did not rest in contact, being prevented from so doing by the action of a spring, which tended to move the end of the lever provided with the button upward.

I remember, about twenty years ago, making a telegraph key for my own use which consisted of a flat brass spring bent downward at one end and rigidly attached at that end to a block of wood. The other or free end of the spring carried a hard rubber key knob of the usual construction and on its lower surface a platinum point, which, upon depressing the spring, came in contact with another platinum point supported on the wooden base. The upward movement of the free end of the spring was limited by an adjustable stop-screw passing through a brass arch supported on the wooden base. Binding posts attached to the spring lever and lower contact point made the key complete. I hold in my hand a key constructed, as nearly as I can remember, like the above-mentioned key.

(The telegraph key referred to by witness is here offered in evidence and marked Defendant's Exhibit "Warner Spring Lever Key.")

Q. 8. State to what extent the key like Exhibit "Warner Spring Lever Key" was used.

A. I made use of that key for about two years, principally in the study of the Morse system of telegraphy.

Q. 9. Mention some of the persons, if any, who saw you use it at that time.

(Objected to as leading.)

A. I distinctly remember constructing a telegraph line from my residence, in Ottawa, Illinois, to that of Willis D. King, who assisted me in its construction and saw me use the key frequently. We were studying the Morse code together, and frequently used
75 the instruments on a local circuit in one room, taking turns at sending and receiving.

(The foregoing answer is objected to as containing evidence which is not pleaded in defendant's answer to the bill of complaint, and notice is given to defendant's counsel that at the proper opportunity therefor motion will be made by complainant to strike out all those parts of the testimony of the witness Warner as relate to the Exhibit "Warner Spring Lever Key" or the original key testified to by him, of which the exhibit is a reproduction.)

Q. 10. Go on and state whether or not you have known of spring-lever keys similar to your exhibit being in use since the time you made the Ottawa key; and, if so, when, where, by whom, and to what extent.

A. Since making that key I have seen a great many similar keys in use. In about the year 1868 I saw such a key used on a rheostat and differential galvanometer, known as the Varley rheostat, at Ottawa, Illinois, in the factory of the Western Union Telegraph Company. I have also seen a number of such keys in use at various times during the past fourteen years, in the office of the Western Union Telegraph Company at Chicago, Illinois. They have been manufactured and sold by the defendant company for the past twelve years, being made use of for circuit-closing keys on an instrument known as the Silvertown bridge and rheostat.

Q. 11. How early did you know of such keys being made and sold in Chicago?

A. In the early part of 1873.

Q. 12. By whom were they made?

A. By the Western Electric Manufacturing Company, at Chicago, Illinois.

Q. 13. To whom were they sold?

A. Principally to the Western Union Telegraph Company, telegraph superintendents of various railroads, and telephone companies.

Q. 14. Did you ever use such keys yourself in Chicago prior to 1880?

A. I did, for at least five years prior to that date.

Q. 14. Look upon Defendant's Exhibit "Spring Lever Telegraph Key" and state whether or not you knew of such keys being made, used, or sold at Chicago prior to 1880.

76 A. I do not remember to have seen keys of precisely this construction made and sold prior to that date.

Q. 16. What other form of spring-lever key, if any, did you know of in Chicago prior to 1880?

A. I knew of a key having a spring lever formed in V shape, held rigidly at the broad end, and provided at the free end with a knob, to be used in operating.

Q. 17. Where and when did you see such keys?

A. In the central office of the Western Union Telegraph Company, at Chicago, Illinois, in 1875; also in 1876, 1878, and 1879.

Q. 18. By whom were they used at that time?

A. Principally by Mr. C. H. Summers, Mr. F. W. Jones, by the chief operators of the company, and myself.

Q. 19. What is understood by the term telegraph key?

A. An instrument used in telegraphy for transmitting signals and operated by the hand of a person commonly known as a sending operator. It is used in transmitting or sending signals on a wire, but not in receiving them.

Q. 20. Referring to the third claim of the Edwards patent, you will observe that adjusting screws marked "H H," for regulating the amplitude of the lever movement and the retractile resistance of the torsion spring, are made elements of the combination. State whether or not, to your knowledge, such adjusting screws were known prior to September 1, 1882.

A. I knew of keys in use prior to the date mentioned, in which two screws were used in the circuit-breaking lever, whose functions were precisely the same as those described in the third claim of Mr. Edwards' patent. The circuit-breaking lever was pivoted on a steel shaft, held in centers, and a coil spring served to raise the lever.

Q. 21. You will note that the adjustment of the torsional resistance of the spring in key "Exhibit E" is effected by changing the position of the contact point of the key, carried by one of the adjusting screws. In the keys you refer to in your previous answer was the contact of the key lever on one of the adjusting screws, as shown in said "Exhibit E?" If not, explain the construction of said keys in this respect.

77 A. I observe that the torsional resistance of the spring in "Exhibit E" is regulated by the adjustment of the platinum-pointed screw nearest the knob, and that this platinum-pointed screw forms a conductor for the current whenever brought in contact with the platinum point below. In the keys I have mentioned in my last answer this screw was present and its functions were precisely similar, the spring used being one varying greatly in its resistance throughout a short field placed very near the fulcrum of the key lever, on the side toward the platinum-pointed screw. As in the key "Exhibit E," the screw at the outer end of the lever simply served to limit motion.

Q. 22. Was the screw in the outer end of the lever adjusted as in "Exhibit E?"

A. It was.

Q. 23. State, if you know, where and to what extent those keys were used prior to September, 1882.

A. I cannot state positively where or to what extent they were

used, but remember distinctly having seen such keys undergoing repairs in the factory of the Western Union Telegraph Company, at Ottawa, Illinois, between 1867 and 1872.

Q. 24. Did those keys have any particular name; if so, what was it?

A. They were called the "old-style Western Union key."

Q. 25. As I understand you, in the keys which you saw undergoing repairs the adjustment of the spring pressure was effected by simply changing the field of oscillation of the circuit-breaking lever by adjusting screws, one of which was in the outer end of the lever and the other between the knob and the fulcrum, the latter adjusting screw being over the anvil and forming the contact point of the lever. Am I correct?

A. You are.

Q. 26. Look upon Defendant's "Exhibit Pole-Changer" and state when, if ever before, you first saw a pole-changer similar in construction to the exhibit, your attention being especially directed to the torsional spring upon which the armature is mounted.

A. I first saw a pole-changer similar to the exhibit in the city of Cincinnati, Ohio, in September or October of 1881. I at that time noticed particularly the manner in which the armature was mounted upon the torsional spring as well as other details of the construction.

Q. 27. What other persons, if any, saw the pole-changer
78 with the torsional spring at that time?

A. I do not distinctly remember any particular person examining it at the same time. There were quite a number of people present.

Q. 28. How many do you think?

A. About ten or twelve.

Q. 29. Was John A. Seely present?

A. I do not know.

Q. 30. Mention any other electrical instrument in which you have known of the use of a torsional spring.

A. I have known of the use of a torsional spring in the electrical instrument known as the quadrant electrometer of Sir William Thompson, illustrated and described in a publication in 1872, entitled "Papers on Electrostatics and Magnetism," by Sir W. Thompson, page 262, the particular portion of this quadrant electrometer in which the torsional spring is made use of being that known as the idiostatic gauge described on page 272 of the above-mentioned publication, and illustrated in figures 2 and 4, plate 1, following page 262; also in figure 12, plate 2, following page 280. The torsional spring is also used in an instrument of Sir William Thompson's invention, commonly known as the "Absolute Electrometer." It is illustrated in figure 11, plate 2, and described on page 281.

(Counsel for defendant gives notice that he will refer to the portions of said publication mentioned by the witness at the hearing of this cause.)

(Complainant's counsel states that he will object to such reference unless the book be put in evidence and the drawings contained in it and referred to by the witness be properly explained.)

Q. 31. State when, if ever, you have made torsional springs for Sir William Thompson's instruments referred to, and to what extent such torsional springs have been made, describing the torsional springs in detail.

A. In June and July, 1878, I find, on reference to my books, I made three quadrant electrometers in which I made use of a torsional spring precisely similar to that described in Sir William Thompson's work. In fact, the instruments were constructed by me personally, with no other guide than the published description and drawings contained in the work. I have since seen a number of such instruments of foreign manufacture in Chicago
79 and other places. They are a well-known form of electrical instrument.

Q. 32. Please illustrate by a model the torsional spring and its function as made by you in 1878.

(Witness here produces a model, and the same is offered in evidence and marked Defendant's Exhibit "Adjustable Torsional Spring.")

A. The torsional spring made by me in 1878 was of circular cross-section—in fact, a wire connected to adjustable springs at each end, said springs being supported in such a manner as to permit of their rotation on axes placed in line with the torsional wire spring, whereby any desired degree of torsion could be given to the wire and a tendency communicated to the lever suspended in the center of the wire to move in the direction in which the supporting springs were turned, the wire serving as an axis or fulcrum. In the model which I hold in my hand, marked Exhibit "Adjustable Torsional Spring," the plan of construction is similar to and the functions of the various parts the same as in the instruments constructed by me in 1878. It is, however, somewhat heavier and some portions are constructed of different material than that used in the above-described instruments. I myself constructed this model in order to avoid placing in evidence a very expensive and cumbersome instrument, the torsional spring and lever forming only a small part of said instrument, but so constructed as not to be readily removed therefrom.

Q. 33. What has become of the instruments that you made in 1878, having the torsional springs like torsional springs in the Exhibit "Adjustable Torsional Spring"?

A. One instrument was sold to Thomas A. Edison, now of Orange, New Jersey; another instrument is in use in the laboratory of the Western Electric Company of Chicago, and another still in stock in the store of the Western Electric Company of Chicago.

(Counsel for defendant here offers to exhibit the instruments referred to by witness to counsel for complainant, with such explanations as he may wish from the witness.)

(Complainant's counsel states that this testimony is taken
80 for the purpose of enlightening the court on the matters in issue, and although he is personally glad to accept the offer

of defendant's counsel, he does not feel warranted in binding his clients by any matters which do not appear on the record.)

Q. 34. Look upon Complainant's Exhibits "Sounder of the Western Electric Company" and the sounder marked "Complainant's Exhibit B" and state whether you have examined and understand the construction of said sounders.

A. I have examined them and understand their construction. The two sounders are identical in construction.

Q. 35. Please describe the construction of the same and their mode of operation.

A. Upon a wooden base is attached by screws a brass plate. Extending upward from this plate are two brass posts connected at their top by a flat piece of metal, having a rib or brace formed on one edge to give it rigidity. To the center of the aforesaid strip of metal (which is rigidly secured to the upright posts by clamping screws) is attached one end of a brass lever, being held thereto by means of a screw and washer, the screw passing through a hole in the metal strip into the brass lever. At a short distance from the center of the lever is fixed an iron armature, held in position by a gain and screw. The brass lever is also provided at a point near the opposite end to that which is attached to the metal strip with an adjustable stop-screw, having a check-nut which rests against the upper surface of the lever. Directly underneath this screw is a post extending upward from the lower brass plate, having an arm extending upward and around the free end of the above-mentioned lever, said arm being provided with an adjustable stop-screw, which limits the upward movement of the lever. The last-mentioned post is also provided with an adjustable screw which is connected with the spiral spring, which is commonly known as the retractile spring. The tension of this retractile spring serves to hold the free end of the lever against the point of the upper stop-screw, the retractile spring being attached to the hooked end of an arm extending downward from the armature lever. The armature lever is caused to strike alternatively against the stops as the circuit through the
81 coils of the electro-magnet is opened and closed. The key is used for opening and closing the circuit. The armature lever of the sounder vibrates in response to the making and breaking of the circuit, caused by the key. In the sounder the armature must have a definite adjustment with respect to the poles of the electro-magnet. This is effected by means of the stop-screw carried by the lever, and when once made need not be changed. In the exhibit sounders there is no means whatsoever of adjusting the torsional resistance of the flat piece of metal or spring on which the lever is pivoted. Any adjustment of the stop-screws which would affect the retractible resistance of the flat spring or torsional spring would so change the position of the armature with respect to the poles of the electro-magnet as to make the sounder inoperative.

Q. 36. How are the signals read from the sounder?

A. The receiving operator listens at the sounder and the message is spelled out by the sounds given forth by the armature lever as it

vibrates, striking against the stops. In this country the Morse code of signals is generally used.

Q. 37. Is a sounder a transmitting instrument?

A. It is not in any sense. It is a receiving instrument. I never heard it called a transmitting instrument and should consider it absurd to call it so.

Adjourned until to-morrow at 10 o'clock, by consent of counsel.

Met, pursuant to adjournment, at 10 o'clock a. m., this 13th day of January, 1887.

Present: Counsel of respective parties.

Testimony of ERNEST P. WARNER continued:

Q. 38. State whether or not you have shown and explained the quadrant electrometers which you made in 1878 to Mr. Antonio Knauth, counsel for complainant?

A. I have this morning shown and explained to Mr. Antonio Knauth one of the idiostatic gauges used upon a Sir William Thompson quadrant electrometer made by myself in 1878.

Q. 39. I call your attention to a book published in London by Lockwood and Company, in 1859, under the title "Manual of Electricity," "Noad," and direct your attention to figures 412 and
82 413, page 755, and the description of said figures on page 756, as follows:

"The apparatus or key for opening and shutting the circuit is shown in Fig. 412. A small metallic anvil, E, is secured on a platform, P P. It is in metallic communication underneath with a copper wire, C. M is a metal hammer attached to a spring and soldered to the block B, also in contact with a copper wire, D. Another and better form of key apparatus is that shown in Fig. 413, the operation of which will be understood by a single inspection. The hammer L is prevented from touching the anvil J when the telegraph is at rest by the spring D acting on the lever C, the hammer R and the anvil K being then in contact. On pressing down the lever, L and J come in contact—the voltaic current passes through the telegraph." State when, if ever, you have seen telegraph keys like those illustrated and described in the United States.

A. In the years 1864 and '5, at the factory of the Western Union Telegraph Company, at Ottawa, Illinois.

Q. 40. Both forms?

A. Yes; particularly the form illustrated in Fig. 413.

Q. 41. Is this the form which you referred to yesterday as the "old form of Western Union telegraph key"?

A. It is. They were used, to my knowledge, by other parties as well as the Western Union Telegraph Company.

(The cuts, Fig. 412 and Fig. 413, and the description thereof quoted are offered in evidence.)

Q. 42. Will you make a model of the key illustrated in Fig. 413 and offer the same in evidence?

A. I will have such a model ready to-morrow.

The witness volunteers the following statement: I described the key as having its fulcrum supported on center screws in the latter part of my answer 20. It was, I now remember, supported on trunnions or pivots.

Q. 43. Of what did the repairs consist which were made on these keys and by whom were they made?

83 A. The repairs consisted of polishing and replacing the old flat springs first in use near the outer extremity of the lever with spiral springs placed near the fulcrum, which were found to permit of freer action in the key. The repairs were made by the Western Union Telegraph Company. My father, James C. Warner, was employed at the work.

Cross-examination by Mr. KNAUTH:

C. Q. 44. Is the size of the parts of the electrometer represented by the model, "Adjustable Torsional Spring," the same in the original and in model?

A. I stated in answer to a direct question that the sizes differed.

C. Q. 45. How much do the sizes differ?

A. The various parts differ in size in different degrees. I should say a fair average of increase in size would be about one hundred per cent.—that is, that the model is twice as large as the original.

C. Q. 46. Do you mean to be understood that the proportions of the various parts are not the same in the model as they are in the original instrument?

A. I do. The relative proportions differ slightly.

C. Q. 47. Is not the wire much finer in the original than in the model?

A. I think it is.

C. Q. 48. Is it the purpose of the wire in this instrument to cause rapid and regular oscillations of the ends of the lever?

A. The wire permits of such oscillations.

(Answer objected to as irresponsive and question repeated.)

A. I do not think it is; in fact, such is not its purpose.

C. Q. 49. Has the original instrument a circular plate of metal underneath the shorter end of the lever, as appears in the model?

A. It has; it is termed the attracting disc.

C. Q. 50. Is there not a recess in the plate in the original into which the lever fits?

A. There is an opening or recess in the upper plate or lantern top, but the lever does not fit this recess, the opening being large enough to permit of perfect freedom of motion of the lever and permit the attracting disc to act freely on it.

C. Q. 51. How is the charge of electricity measured by this instrument and how is it possible to read the measurement?

84 A. The torsional spring which forms the fulcrum of the lever is turned in such a direction that the torsion or twist throws downward the long end of the lever. Weights are then placed upon the short end of the lever to counteract the torsional

effect. After having determined the amount of weight necessary to do this the weights are removed, and upon exciting the attracting disc below the short end of the lever to such a degree as to attract the lever to the same position as that occupied when the weights were in place it would then form a measure of the attraction due to the electrical charge.

ERNEST P. WARNER.

Cross-examination closed.

ENOS M. BARTON, the next witness produced on behalf of the defendant, being duly sworn, deposes and says, in answer to questions propounded to him by GEORGE P. BARTON, Esq., solicitor for defendant, as follows:

Q. 1. What is your name, age, residence, and occupation?

A. Enos M. Barton; age, 44; residence, Chicago; occupation, president of the Western Electric Company.

Q. 2. Explain briefly the business of defendant company.

A. The business of the defendant company is manufacturing telegraphic and other electrical instruments and apparatus.

Q. 3. Do you manufacture under patents to any extent?

A. We do, to a considerable extent. A large proportion of our work is on patented apparatus, and our company owns some hundreds of patents relating to electrical apparatus.

Q. 4. How long has your company and its immediate predecessor been in business?

A. Our company and its predecessor, the Western Electric Manufacturing Company, has carried on the same business for about fifteen years, and for two years before the same business was conducted by a firm in which I was a partner.

Q. 5. During all this time have you been actively connected with the business?

A. Yes; I have had immediate charge of the business during the seventeen years that it has been carried on.

85 Q. 6. During that time what has been your course with reference to beginning the manufacture of any new kind of apparatus with respect to patents not controlled by you, and how far have you been successful in avoiding suits for infringements of patents owned by others?

A. We have always been very careful to avoid infringements of patents and have devoted a great deal of attention to examining into the question of whether any proposed manufacture of ours would infringe any patents that we did not own. We have been very successful in avoiding claims for infringement of patents, notwithstanding the fact of the very great number of electrical patents in existence. I think we have never had but three suits for infringement brought against us prior to this suit under the Edwards patent. One of these suits was for infringement of the well-known Simpson gutta-percha patent, in which nominal damages of six cents were awarded to the complainant. Another was under the Leclanche battery patent, and the other case was when we first engaged in

business, for the infringement of a patent of E. A. Hill, brought against the firm of Gray & Barton, which we settled.

Q. 7. During the seventeen years how much have you paid as damages in settlement of the suits you mentioned?

A. The amount paid for damages under all these suits would be less than three hundred dollars.

Q. 8. Before beginning the manufacture of the sounders marked "Exhibit Sounder Western Electric Company" and "Exhibit B" did you make or cause to be made an examination of the patents relating to the said sounder? And, if so, state the result of such examinations.

(Objected to as immaterial and irrelevant.)

A. I had an examination made, before engaging in the manufacture of these sounders, to see whether any patents would be infringed. I examined the Edwards patent carefully myself, and had it examined with the proposed sounder by the best experts that were available. The result was a conclusion, without any dissent or doubt, that the sounder did not infringe the Edwards patent, and we found no other patent under which the question of infringement could be raised.

86 Q. 9. State briefly your experience as a telegraph man and patent expert.

A. I was employed as a telegraph operator for about fifteen years, sending and receiving messages. Since engaging in the manufacture of electrical instruments I have been almost daily engaged in considering questions relating to electrical patents and making contracts in which the value of electrical patents was an important element.

Q. 10. In the telegraphic art, what is a sounder and what is a key?

A. In the telegraphic art the sounder is the instrument from which the operator receives and reads messages by ear, the messages being struck out by ticks representing the Morse characters. The key is the instrument by which the messages are transmitted in Morse characters from the transmitting end of the line. The key is at the transmitting end of the line and the sounder at the receiving end of the line. Usually, but not necessarily, each line has a key and sounder at each station. This is to enable dispatches to be transmitted alternately, at convenience, in both directions.

Q. 11. Would it be correct to call the sounder a transmitter? Would such a term be understood by a telegraph man as applied to a sounder?

A. It would not be correct to call a sounder a transmitter; it would be absurd. A man engaged in the telegraphic business would not call a sounder a transmitter or understand what any one meant who should call a sounder a transmitter. It would be a contradiction of terms.

Q. 12. You state that you have examined the Edwards patent sued on in this case, which is in evidence, marked Complainant's "Exhibit A." Will you examine "Exhibit La Rue Key" and state

whether the key is substantially the same as the key illustrated and claimed in the patent?

A. The "Exhibit La Rue Key" is substantially the same as the key of the Edwards patent.

Q. 13. What can you say as to the state of the art with respect to telegraph keys and torsional springs in telegraph instruments as it existed prior to 1880?

A. Telegraph-key levers suspended by a spring have been common for more than twenty years. Torsional springs in electrical instruments have also been well known for a good many years. Sir William Thompson's well-known electrometer is an instrument which contains a torsional spring holding a lever at right angles with a spring and suspended upon the spring. This has been a matter of common knowledge in this country for about twenty years.

87

Adjourned, by consent of counsel, till to-morrow at 10.30 a. m.

Met, pursuant to adjournment, this fourteenth day of January, 1887, at 10.30 a. m.

Present: Counsel for respective parties.

Q. 14. In view of the state of the art as it existed prior to 1880 what can you say as to the scope and utility of the Edwards device or invention as described and claimed in his patent, "Exhibit A?"

A. The torsional spring is an element in each of the claims of the Edwards patent. In view of the prior use of torsional springs, I cannot see that there is any invention in suspending a key lever upon such a spring. In a telegraph key it is important that the lever should move under the touch of the operator with great freedom. I have examined and manipulated the La Rue keys, so called, as made under the Edwards patent, and have never seen one whose lever had the free movement which is desirable. The torsional spring is a cheap method of suspending a key lever, but it does not make as good a key, in my judgment, as the method by suspending on trunnions.

Q. 15. State whether there is any market or demand among telegraph companies for the Edwards or La Rue telegraph key.

A. I believe there have been a few of them sold, but there has been no general demand for them and they are very slow in selling.

Q. 16. At a price less or more, as compared with the same keys with trunnions.

A. At the same price, the key with trunnions is almost or quite universally preferred.

Q. 17. I call your attention again to the sounder exhibits. Please compare the sounder, "Exhibit B," with the third claim of the Edwards patent, "Exhibit A," and state whether or not you find in the sounder exhibit the adjusting screws H H′ mentioned in said third claim.

88 A. The adjusting screws H H′, of the third claim of the patent, serve the double purpose of limiting the stroke of the key lever and also of regulating the tension of the spring. The adjusting screws of the sounder, which limit the stroke of the armature lever, do not serve the purpose of regulating the tension of the suspending spring. The sounder has a retractile spring, which is adjustable by itself, to give the upward movement or stroke to the armature lever. The object of the Edwards invention in the key, as claimed in the third claim and as explained in lines 45 to 50 and 68 to 87 of the specification, is to do away with the retractile spring as ordinarily used in telegraph keys. The object of the screws which limit the stroke of the sounder lever is precisely the same as that of the similar adjusting screws of sounder levers as made for the last twenty or thirty years. They regulate the length of stroke of the armature lever and limit the armature in respect to the nearness of its poles to the poles of the electro-magnet. Therefore I should say that the screws H H′, as described in the third claim of the patent, are not found in the sounder.

Q. 18. State the position which the poles of the armature should have with respect to the poles of the electro-magnet.

A. The armature should approach very near to the poles of the electro-magnet without ever touching them.

Q. 19. Do you mean to say that the nearer the armature is to the poles of the electro-magnet the better, as long as it does not touch?

A. There should be about the thickness of ordinary writing paper between the poles of the magnet and the armature when the armature is nearest to the poles.

Q. 20. Do you find in the sounder a circuit-breaking lever or any device corresponding to or the equivalent of the lever mentioned in the third claim of the Edwards patent?

A. There is no circuit-breaking lever in the sounder, and no equivalent of the lever claimed in the third claim of the Edwards patent.

Q. 21. What can you say as to the function of the torsional spring of the sounder as compared with the function of the torsional spring in "Exhibit Pole-Changer?"

A. I should say that the function of the torsion spring in both instruments is the same.

ENOS M. BARTON.

89 Sworn to before me—

F. H. McCULLOCH,
Notary Public.

No cross-examination.

Adjourned, by consent of counsel, to 3 o'clock p. m. to-day, to afford Mr. Warner an opportunity of producing the model called for by counsel.

Met, pursuant to adjournment, at 3 p. m., this 14th day of January, 1887.

Present: Counsel of respective parties.

ERNEST P. WARNER, being recalled and examined on the part of defendant, testifies as follows in answer to interrogatories propounded by counsel for defendant:

Q. 52. Have you made the model asked for by question 42?

A. I have and I here produce it. This model is a telegraph key, like that described in Fig. 413, page 755, of a book published in London by Lockwood & Co., in 1859, under the title, "Manual of Electricity," "Noad."

Q. 53. When, if ever, did you know of keys like the model being made in the United States?

A. About 1863 and 1864 keys like the model were frequently repaired in the shops of the Western Union Telegraph Company, at Ottawa, Illinois. I frequently saw my father doing the work at that time. He generally removed the flat spring and substituted a coiled spring, the coiled spring being placed between the wooden base and lever vertically and as close to the fulcrum as the anvil would permit.

(The model referred to is offered in evidence and marked "Defendant's Exhibit Old Style Western Union Key.")

Q. 54. What is the function of the screws in the lever of the Exhibit "Old Style Western Union Key?"

A. The function of the screws *are* to regulate the length of stroke and the pressure of the spring. They are in function precisely the same as screws H H′ of the Edwards patent.

ERNEST P. WARNER.

90 Sworn to before me—

F. H. McCULLOCH,
Notary Public.

(By consent of counsel it is stipulated that all the model exhibits be delivered to Mr. Antonio Knauth, of Briesen & Steele, counsel for complainant, to be used in taking complainant's testimony in rebuttal, as they may be advised, and the exhibits are delivered to Mr. Knauth accordingly.)

F. H. McCULLOCH,
Notary Public.

(Defendant's counsel here gives notice on the record that defendant's testimony is closed.)

92 UNITED STATES PATENT OFFICE.

CHARLES D. HASKINS, of Brooklyn, New York, Assignor to the Western Electric Company, of Chicago, Illinois.

Telegraph-Sounder.

Specification forming part of Letters Patent No. 352,317, dated November 9, 1886; application filed June 22, 1886; serial No. 205,851. (No model.)

To all whom it may concern:

Be it known that I, Charles D. Haskins, a citizen of the United States, residing in Brooklyn, in the county of Kings and State of New York, have invented certain new and useful improvements in telegraphic sounders, of which the following is a specification.

The invention relates to the construction of telegraphic instruments, and is especially applicable to telegraphic sounders and keys.

The object of the invention is to provide convenient means for supporting the armature and armature-lever in the proper position relative to the electro-magnet and to dispense with the employment of trunnions or a pivoted support.

The invention further involves a special arrangement of parts, whereby the working-point of the sounder is placed immediately above the stroke-post, which serves to give a clearer and more sharp reading-stroke.

The armature-lever is secured to a flat spring having rectangular extensions which enter a slot at the end of the lever. This insures not only that the lever shall be held in its proper position vertically, but also prevents any horizontal movement of the same.

It has heretofore been proposed to support a lever of a key or an armature upon a flat torsional spring. In such construction, however, there is danger of the lever turning upon its support horizontally.

(Here follows diagram marked p. 91.)

In the accompanying drawings, figure 1 is a side elevation, and Fig. 2 an end view, of an instrument embodying the features of the invention. Fig. 3 is a plan.

Referring to the figures, A represents an electro-magnet provided with an armature, *a*. The armature is carried upon a lever, B, and the lever is supported from two posts, B′ and B², extending from a base, C. A spring or plate of resilient metal, D, is attached at its central part to the lever by means of a screw, *e*, or in any other convenient manner. The ends of this spring are respectively secured to the posts B′ and B² by screws *b′* and *b²*. A slot, *c′*, is formed in the lever B, and a rectangular lip or projection, *c²*, on the spring D enters this slot. This lip is preferably curved, gradually increasing in width from the ends of the spring. The lip is tightly secured in

position, and, together with the upper surface of the spring, holds the lever firmly in position, and at the same time the flexibility of the spring permits whatever vertical movement is required.

The lever is preferably not dependent for its retractile force upon the spring D, although it may be so, but is assisted by a coil-spring, E, extending from an arm, e^2, secured to the lever preferably immediately beneath the spring C. The other end of this lever is secured to an adjacent screw, f', extending through a post, G. This post constitutes the sounding-post against which the point g upon the lever B strikes, and is directly beneath the lever.

The arm H extends from the upper end of the sounding-post G in a direction parallel to the lever, and then is curved over the top of the same, and carries a contact-screw or limiting-stop, h, which is adjustable in any convenient manner.

The invention has been described in connection with a telegraphic sounder; but it is evident that the torsion-spring may be applied to the armature-lever of any telegraphic receiving-instrument or to the lever of any telegraphic key without departing from the spirit of the invention.

I claim as my invention—

1. The combination, with a lever and means for operating the same, of a supporting torsional spring having a lip extending from the same entering a slot formed in the lever, substantially as described.

2. In a telegraph receiving-instrument, the combination, with an electro-magnet and its armature and a lever supporting the armature, of a flat spring secured to said lever and having an angled extension or lip and means for securing said lip to said lever.

3. The combination, with an electro-magnet, its armature, and armature-lever, of a flat supporting-spring secured to said lever at a central point, supports for the respective ends of said spring, a lip or angled projection upon one side of said spring, entering a slot in said lever, and an adjustable retractile spring applied to said lever.

93 4. In a telegraph receiving-instrument, the combination of an electro-magnet, its armature, a lever for the same, a flat torsional spring carrying said lever and having its ends rigidly supported, an arm attached to said lever, extending in a direction at right angles to said spring, and a retractile spring connected with said arm.

In testimony whereof I have hereunto subscribed my name this 2d day of June, A. D. 1886.

CHAS. D. HASKINS.

Witnesses:
JAMES HARÜBLET.
CHARLES A. TERRY.

93½ At a stated term of the circuit court of the United States of America for the southern district of New York, in the second circuit, held at the United States court-rooms, in the city of

New York, on the sixth day of April, in the year of our Lord one thousand eight hundred and eighty-seven.

Present. The Honorable Alfred C. Coxe, judge.

GEORGE W. LA RUE
vs.
WESTERN ELECTRIC COMPANY.

The above-entitled cause coming on this day for final hearing upon pleadings and proofs—

Mr. A. v. Briesen is heard in behalf of complainant.

Mr. A. Knauth is heard in behalf of complainant.

Mr. George P. Barton is heard in behalf of defendant.

C. A. V.

94 United States Circuit Court, Southern District of New York.

GEORGE W. LA RUE
vs.
WESTERN ELECTRIC COMPANY.

Arthur v. Briesen for the complainant.

George P. Barton for the defendants.

COXE, *J.*

This is an equity action for infringement of letters patent No. 270,767, granted to Edgar A. Edwards January 16, 1883, and by him assigned to the complainant.

The invention relates to instruments used for transmitting telegraphic signals and is said to be an improvement upon the well-known Morse key, the inventor substituting as the lever fulcrum a torsional spring or strip of metal for the trunnions or pivots which were before in use.

The patent contains four claims. In the first, second, and fourth "the circuit-breaking lever" is distinctly made an ingredient of the combination. The third claim is in these words:

"3. The combination, in a telegraph key, of the lever ful-
95 crumed upon the torsional spring, with the adjusting screws H H′ for regulating the amplitude of the lever movement and retractile resistance of the torsion spring, substantially as described."

It will be observed that this claim omits "the circuit-breaking lever" as an element, and in this respect is broader than the other three. The infringing instrument is called a "sounder" and contains no "circuit-breaking lever," as this term is generally understood in the art. The complaint, however, insists that the sounder has a lever which breaks not an electric but a magnetic circuit, and is therefore within all the claims of the patent. What the patentee invented and unquestionably intended to secure was a flat torsional spring, ribbed or otherwise, upon which a lever is fulcrumed, when in any electrical instrument it can be substituted for the pre-existing trunnions and spiral spring and perform the two-

fold function of a supporting fulcrum and a retractive spring. He distinctly says that he does not limit himself to the application of the spring to the key alone, as it is obvious that it may be used to replace the trunnions of the relay and sounder. He may, however, have so restricted three of his claims that they do not cover the instrument used by the defendants. It is not essential in the present action to decide this question. If it is held that the third claim is infringed the complainant will derive the same advantage as if the decree declared the infringement of all.

The defendant insists that the patent is void for want of utility and invention, and that they do not infringe; but a word
96 need be said regarding the first defense. Several instruments embodying the invention have gone into practical operation and have apparently been received with favor by telegraphists. In fact, it appears that an employé of the defendants, Charles D. Haskins, has since the commencement of this suit secured a patent dated November 9, 1886, for an improvement in telegraph receiving instruments, one element of the combination being a torsional spring substantially identical with the patented spring, the only difference being in the manner in which it is fastened to the lever. This patent was assigned to the defendants. It can hardly be said, then, that Edwards' invention is without utility. That which is used is useful. A thing to be useless can have no utility whatever. A patent is never declared invalid upon this ground at the instance of one who is deriving benefit by infringing upon its claims. (Gibbs *v.* Hoefner, 22 Blatchf., 36, and cases cited.)

Is the patent void for lack of invention? The defendants, for the purpose of illustrating the art at the date of the invention, have introduced in evidence a number of exhibits showing the manner in which telegraph keys were constructed prior thereto. It is unnecessary to refer to these, as they do not contain the torsional spring and add very little to the light thrown upon the prior art by the statements of the patent itself. The exhibits which are the nearest approach to the invention are the magnetic "pole-changer"
97 and the "adjustable torsional spring." In the "pole-changer," first known in 1881, there is a lever which oscillates between fixed points and is fulcrumed upon the free end of a non-adjustable torsional spring. The principal office of this spring is to form a supporting fulcrum for the armature lever. The retractile force exerted by it is very slight. If one of the supporting posts in the patented apparatus were removed its similarity to the "pole-changer" would be more apparent. The "adjustable torsional spring" exhibit is an enlarged model of an instrument made by one of the witnesses in 1878. It consists of a fine wire connected at each end to adjustable brackets, a lever being suspended in the centre of the wire. It is not the purpose of the wire to cause repeated and regular oscillations of the ends of the lever. That it performs any torsional function is strenuously disputed. The wire is very fine, and as its ends are not firmly fastened, but to some extent are permitted to rotate in the holes of the brackets, it is not easy to see how it can be twisted to exert any appreciable force. It is enough to say that the

matter is involved in doubt. Neither of these exhibits can be said to anticipate or otherwise to defeat the patent. It follows, therefore, that the patentee has made an invention, not a great one, certainly, but one entitling him to a position far above the plane of the skilled mechanic. Torsional springs were, of course, well known; so
98 were telegraph keys and sounders, minus this spring, but the combination of the patent was never before used, and there is nothing in the prior art to suggest it, except to an inventor; to one who is a skilled artisan only it would never have occurred.

Do the defendants infringe? They argue in the negative for the reason that the combination of the third claim is confined to a telegraph key, and, by implication, to a "circuit-breaking lever," and, as they use the combination in a telegraph sounder and not in a key, they do not infringe. They insist, further, that they do not employ the adjusting screws H H'. In regard to the latter suggestion the defendant's expert testifies:

"I find two adjusting screws having a relation to the lever of the sounder similar to that of the screws H H' to the lever of the key in the patent, but in the sounder they do not practically have any effect upon the retractile force applied in the lever."

The complainant's expert considers the functions the same in every particular. The court is satisfied that he is correct.

As has been seen, the third claim does not contain the element of a "circuit-breaking lever," and, in view of the clearly expressed intention of the patentee to include other telegraphic instruments, it must be held to include the lever of a sounder. Fairly construed, the claim should read: "The combination in a telegraph key or
99 sounder." To restrict it to a 'key' alone, as that word is known in telegraphy, would be most illiberal and would unduly circumscribe the invention. No better illustration of this can be found than the following statement from the Haskins patent, before alluded to:

"The invention has been described in connection with a telegraphic sounder, but it is evident that the torsional spring may be applied to the armature lever of any telegraphic receiving instrument or to the lever of any telegraphic key without departing from the spirit of the invention."

Equally it is true that the Edwards spring may be applied to a sounder without departing from the spirit or the letter of the invention.

As the question of infringement was carefully examined by this court upon the motion for a preliminary injunction (28 Fed. Rep., 85), it is unnecessary to repeat what was then said.

There must be a decree in favor of the complainant upon the third claim for an injunction and an accounting.

As the motion to punish the defendants for contempt will probably turn upon a question of fact, which ought not to be determined upon affidavits, it is thought that this issue should also be referred to the master and the motion held in abeyance until the coming in of his report.

(Endorsed:) United States circuit court, southern district of New York. George W. La Rue *vs.* Western Electric Co. Decision. Coxe, J. U. S. circuit court. Filed May 16, 1877. Timothy Griffith, clerk.

100 At a stated term of the circuit court of the United States for the southern district of New York, in the second circuit, held at the court-rooms of said court, in the city of New York, in the State of New York, on the 23rd day of May, 1887.

Present: The Honorable Alfred C. Coxe, judge.

GEORGE W. LA RUE, Complainant,
vs.
WESTERN ELECTRIC COMPANY, Defendant. } In Equity.

This cause having come on for final hearing upon the bill of complaint, the answer thereto of the defendant, the replication of the complainant to such answer, and proofs taken on the part of the complainant and on the part of the defendant, and M. Arthur v. Briesen and Mr. Antonio Knauth having been heard on behalf of the complainant and Mr. George P. Barton, on behalf of the defendant—

Now, therefore, upon consideration thereof, and on motion of Briesen & Steele, solicitors for the complainant, and due deliberation had, it is hereby ordered, adjudged, and decreed that the letters patent of the United States issued to Edgar A. Edwards on
101 the 16th day of January, 1883, numbered 270,767, for a telegraph key, are good and valid in law, and that the complainant herein is entitled to the exclusive rights in, to, and under said letters patent and in and to the invention and improvements secured thereby, and that the title thereto is duly vested in the complainant, and that the defendant has infringed upon the said letters patent and upon the exclusive rights of the complainant thereunder by making, using, and vending to others to be used telegraph sounders made according to and employing and containing the invention and improvements described in said letters patent and claimed in the third claim thereof.

And it is further ordered, adjudged, and decreed that the complainant do recover from the defendant, The Western Electric Company, the gains, profits, savings, and advantages which the said defendant has derived, received, or made by reason of the infringement of the complainant's exclusive rights under said letters patent by any manufacture, use, or sale of telegraph sounders or other telegraphic instruments containing the invention and improvements described in said letters patent and claimed in the third claim thereof, and that the said complainant do also recover, in addition thereto, any and all damages which he has sustained by reason of such infringement of his exclusive rights by the said defend-
102 ant; and it is hereby referred to Samuel A. Blatchford, Esquire, one of the masters of this court, to ascertain, take, and state the numbers of telegraph sounders or other telegraphic instruments made and the number used and the number sold by the said

defendant, The Western Electric Company, in infringement of the third claim of said letters patent and the number of such devices which the said defendant has on hand, and the gains, profits, savings, and advantages derived by the said defendant from and through the said infringements, and to assess the damages thereby suffered by the said complainant and to report thereon to the court with all convenient speed; and the said defendant, The Western Electric Company, and its officers, clerks, managers, agents, and employés are hereby directed and required to attend before the said master, from time to time, as required by said master, and to produce before him such books, papers, exhibits, statements, vouchers, and documents as they may be directed by the said master to produce, and to submit to such oral or other examination as the master may direct.

And it is further ordered, adjudged, and decreed that a perpetual injunction be issued out of and under the seal of this court, enjoining and restraining the defendant, The Western Electric Company, and its officers, directors, servants, agents, attorneys, and workmen from directly or indirectly making or causing to be made, delivering, vending, or causing to be sold, offering for sale, using or causing to be used in any manner any telegraph sounders or other
103 telegraphic instruments like or similar to those which the said defendant has heretofore made, used, or sold, containing or embodying the invention and improvements described in said letters patent numbered 270,767 and claimed in the third claim thereof, and from counterfeiting or imitating the said invention and improvements or any part or parts thereof in any way whatsoever.

And it is further ordered, adjudged, and decreed that the complainant do recover from the defendant, The Western Electric Company, the costs, charges, and disbursements of this suit, to be taxed, and that the question of increase of damages and all further questions be reserved until the coming in of the master's report.

ALFRED C. COXE.

(Endorsed:) Circuit court of the United States for the So. district of N. Y., in the second circuit. George W. La Rue *vs.* Western Electric —. In equity. Interlocutory decree. Briesen & Steele, solicitors for complainant, 229 Broadway, New York. U. S. circuit court. Filed May 23, 1887. Timothy Griffith, clerk.

104 United States Circuit Court, Southern District of New York.

GEORGE W. LA RUE
against
WESTERN ELECTRIC COMPANY. } In Equity.

It is hereby stipulated that the reference to a master in this cause be waived, and that a decree may be entered for one hundred and ten dollars ($110) damages, being royalty of ten cents each on eleven hundred sounders made and sold by defendant.

It is further stipulated that complainant shall, within thirty days after the date of this stipulation, stamp the private line instruments

of defendant which are provided with keys with torsional springs, which identical keys were sold by Lytle & Co. to defendant, with his own stamp, as follows ·

" Licensed under La Rue's patent."

Of which instruments defendant now has not to exceed 61 in Chicago and not to exceed 183 in New York.

That said instruments shall be submitted by defendant to complainant or his agent as follows: The New York instruments altogether upon three days' notice at the New York office of complainant's solicitors, and the Chicago instruments upon five days' notice at the Chicago factory of defendant.

105 That thereafter a final decree shall be entered in this suit for one hundred and ten dollars ($110) damages and an injunction, including sounders and keys provided with levers mounted on torsional springs, except the specific instruments stamped as aforesaid, and for costs, to be taxed against defendant.

That thereafter complainant's costs shall be taxed and defendant may have sixty days thereafter wherein to appeal, and that within said sixty days no execution shall be issued against defendant, and that the appeal, if perfected within sixty days after the costs shall be taxed, shall act as a supersedeas.

August 12, A. D. 1887.

BRIESEN & STEELE,
Complainant's Solicitors.
GEORGE P. BARTON,
Defendant's Solicitor.

(Endorsed:) U. S. circuit court, southern dist. of New York. George W. La Rue *vs.* Western Electric Company. Stipulation. George P. Barton, 225 Dearborn St., Chicago. U. S. circuit court. Aug. 17, 1887. Timothy Griffith, clerk.

106 Circuit Court of the United States, Southern District of New York.

GEORGE W. LA RUE, Complainant,
vs.
WESTERN ELECTRIC CO., Defendant. } In Equity.

Take notice that on Friday, September 30th, 1887, at the opening of the court on that day, or as soon thereafter as counsel can be heard, we shall present the annexed proposed final decree herein to one of the judges of this court, at the court-room thereof, in the General Post-Office building, New York city, for settlement.

New York, September 24th, 1887.

BRIESEN & STEELE,
Sol'rs for Complainant.

To George P. Barton, Esq., solicitor for defendant.

107 At a stated term of the circuit court of the United States for the southern district of New York, held at the court-rooms

thereof, in the city of New York, on the 30th day of September, 1887.

Present: Hon. E. Henry Lacombe, circuit judge.

GEORGE W. LA RUE, Complainant,
vs.
WESTERN ELECTRIC COMPANY, Defendant. } In Equity.

The interlocutory decree entered in this cause on the 23d day of May, 1887, having, amongst other things, awarded costs to the complainant and directed a reference to a master to take an account of damages and profits, and such costs having been taxed by the clerk of this court at the sum of two hundred dollars and thirteen cents ($200.13), and the parties hereto having, by their written stipulation filed herein, fixed and adjusted such damages at the sum of one hundred and ten dollars ($110):

Now, therefore, upon consideration thereof and on motion of Briesen & Steele, solicitors for the complainant, it is hereby—

108 Ordered, adjudged, and decreed that the complainant, George W. La Rue, do recover from the defendant, The Western Electric Company, said sum of two hundred dollars and thirteen cents ($200.13), together with said further sum of one hundred and ten dollars ($110), amounting in all to the sum of three hundred and ten dollars and thirteen cents ($310.13), and that the defendant pay said sum to the complainant, and that the complainant have execution and proper process of this court for the collection thereof.

E. HENRY LACOMBE,
Circuit Judge.

(Endorsed:) Circuit court U. S., so. dist. of New York. George W. La Rue *vs.* Western Electric Co. In equity. Final decree and notice of settlement. Briesen & Steele, 229 Broadway. Service of a copy of the within order is hereby admitted. Geo. P. Barton, sol'r for d'f't. U. S. circuit court. Filed Sept. 30, 1887. Timothy Griffith, clerk.

108½ Circuit Court of the United States for the Southern District of New York.

GEORGE W. LA RUE
vs.
WESTERN ELECTRIC COMPANY.

It is hereby stipulated that the model exhibits in the above-entitled cause may be retained in the possession of the clerk of this court until the hearing on appeal in the Supreme Court of the United States.

New York, Oct. 18, 1887.

GEORGE P. BARTON,
For Western Electric Co.
BRIESEN & STEELE,
Comp't's Sol'rs.

[Endorsed:] U. S. circuit court. Filed Oct. 22, 1887. Timothy Griffith, clerk.

109 U. S. Circuit Court, Southern District of N. Y. In Equity.

GEORGE W. LA RUE
vs.
WESTERN ELECTRIC CO.

To the honorable the Supreme Court of the United States:

The appeal of the Western Electric Company, the above-named defendant and appellant, respectfully showeth—

That upon the 21st day of June, 1886, the above-named complainant filed his bill of complaint in the circuit court of the United States for the southern district of New York against the above-named defendant, Western Electric Company, to enjoin and restrain it from an alleged infringement of certain letters patent of the United States to Edgar A. Edwards for a telegraph key, numbered 270,767, dated January 16th, 1883, and owned by the complainant, and the damage and injury to the complainant resulting therefrom, together with the usual prayer for injunction and accounting.

That subpœna was duly issued on said bill of complaint and duly served; that the said defendant appeared, and that upon the
110 27th day of August, 1886, defendant filed its answer to the said bill of complaint.

That the complainant upon the 6th day of September, 1886, filed his replication to said answer, and thereafter proofs on both sides were taken therein.

That such further proceedings were had in the cause that on the 16th day of May, 1887, an interlocutory decree was entered in said circuit court, wherein and whereby it was decreed in substance that the said patent was good and valid in law; that the said defendant, Western Electric Co., has infringed the said letters patent and ordering an injunction and referring the cause to a master to take an account as prayed for in the bill of complaint.

Whereupon such further proceedings were had in the cause that on the 30th day of September, A. D. 1887, a final decree was made and entered in said circuit court, wherein it was in substance adjudged and decreed that the complainant recover of the defendant, Western Electric Company, the sum of one hundred and ten dollars, together with the further sum of two hundred and $\frac{13}{100}$ dollars costs in the said suit.

Wherefore this defendant, Western Electric Company, appeals from the whole of said decrees of said circuit court because, as it alleges, the said decrees are contrary to law, erroneous and void, and respectfully prays that the pleadings, proofs, exhibits, decrees, depositions, evidence, affidavits, and all proceedings in said
111 cause may be sent to the Supreme Court of the United States without delay, and that the said Supreme Court proceed to hear the cause anew, and that the said decrees of said circuit court and every part thereof be reversed, and that a decree be made dis-

missing said bill of complaint with costs to the defendant, Western Electric Company, in this court and appellant on the appeal, or such other decree as to the said Supreme Court shall seem just.

Dated N. Y., October 6, 1887.

WESTERN ELECTRIC CO.,
By GEO. P. BARTON, *Sol'r.*

GEO. P. BARTON,
Solicitor for Defendant and Appellant,
225 *Dearborn St., Chicago, Ill.*

The above appeal is hereby allowed.
Dated N. Y., Oct. 7, 1887.

E. HENRY LACOMBE,
Circuit Judge.

Due service of the within appeal is hereby admitted this 7th day of October, 1887.

BRIESEN & STEELE,
Sol'rs for Complainant and Appellee.

(Endorsed:) United States circuit court, southern district of New York. In equity. Geo. W. La Rue *vs.* Western Electric Co. Appeal. U. S. circuit court. Filed Oct. 10, 1887. Timothy Griffith, clerk. Geo. P. Barton, solicitor for defendant and appellant, 225 Dearborn St., Chicago. Ill.

112 United States Circuit Court, Southern District of New York.
In Equity.

GEORGE W. LA RUE
vs.
WESTERN ELECTRIC CO.

Know all men by these presents that we, Mills H. Landon, of the city of Brooklyn, State of New York, and Charles D. Haskins, of the city and State aforesaid, are held and firmly bound unto the above-named George W. La Rue in the sum of twelve hundred and fifty dollars ($1,250.00), to be paid to the said George W. La Rue; for the payment of which, well and truly to be made, we bind ourselves and each of us, our and each of our heirs, executors, and administrators, jointly and severally, firmly by these presents.

Sealed with our seals and dated the seventh day of October, in the year of our Lord one thousand eight hundred and eighty-seven.

Whereas the above-named Western Electric Company has prosecuted its appeal to the Supreme Court of the United States to reverse the decree rendered in the above-entitled suit by the judge of the circuit court of the United States for the southern district of New York:

113 Now, therefore, the condition of this obligation is such that if the above-named Western Electric Company shall prosecute its appeal to effect and answer all damages and costs if it fails

to make its plea good, then this obligation shall be void; otherwise the same shall be and remain in full force and virtue.

MILLS H. LANDON. [L. S.]
CHAS. D. HASKINS. [L. S.]

Sealed and delivered and taken and acknowledged this 8th day of October, before me—

[SEAL.] CORNELIUS C. WHITE,
Notary Public for the City & County of New York.

UNITED STATES OF AMERICA,
Southern District of New York, City & County of New York.

MILLS H. LANDON, being duly sworn, deposes and says that he is a freeholder in the State of New York and is worth the sum of twelve hundred and fifty dollars ($1,250.00) over and above all his debts and liabilities.

MILLS H. LANDON.

Sworn to before me this 8th day of October, 1887.

[SEAL.] CORNELIUS C. WHITE,
Notary Public.

114 UNITED STATES OF AMERICA,
Southern District of New York,
City & County of New York.

CHARLES D. HASKINS, being duly sworn, deposes and says that he is a freeholder in the State of New York and is worth the sum of twelve hundred and fifty dollars ($1,250.00) over and above all his debts and liabilities.

CHAS. D. HASKINS.

Sworn to before me this 8th day of October, 1887.

[SEAL.] CORNELIUS C. WHITE,
Notary Public.

Due service of a copy of the above bond is admitted this 7th day of October, 1887, and the approval of the judge of the above bond is hereby waived.

BRIESEN & STEELE,
Sol'rs for Complainant and Appellee.

(Endorsed:) United States circ. court, southern dist. of New York. In equity. George W. La Rue *vs.* Western Electric Co. Bond for damages and costs on appeal. Geo. P. Barton, Esq., sol'r for def't and appellant, 225 Dearborn St., Chicago, Ill. U. S. circuit court. Filed Oct. 10, 1887. Timothy Griffith, clerk.

115 By the Honorable E. Henry Lacombe, one of the judges of the district court of the United States, sitting as a judge of the circuit court of the United States for the southern district of New York, to George W. La Rue:

Whereas Western Electric Company have lately appealed to the

Supreme Court of the United States from a decree lately rendered in the circuit court of the United States for the southern district of New York, made in favor of you, the said George W. La Rue, and have filed the security required by law: You are therefore hereby cited to appear before the said Supreme Court, at the city of Washington, on the twenty-fourth day of October, 1887, to do and receive what may appertain to justice to be done in the premises.

Given under my hand, at the city of New York, in the southern district of New York, in the second circuit, the 7th day of October, in the year of our Lord one thousand eight hundred and eighty-seven.

E. HENRY LACOMBE,
Circuit Judge.

Due service of a copy of the above citation is hereby admitted this 7th day of October, 1887.

BRIESEN & STEELE,
Sol'rs for Complainant and Appellee.

116 (Endorsed:) United States circuit court, southern district of New York. In equity. Geo. W. La Rue *vs.* Western Electric Co. Citation. U. S. circuit court. Filed Oct. 10, 1887. Timothy Griffith, clerk. Geo. P. Barton, Esq., sol'r for def't and appellant, 225 Dearborn St., Chicago, Ill.

117 UNITED STATES OF AMERICA, *Southern District of New York,* } *ss*:

I, Timothy Griffith, clerk of the circuit court of the United States of America for the southern district of New York, in the second circuit, do hereby certify that the foregoing pages, numbered from one to one hundred and sixteen, inclusive, contain a true and complete transcript of the record and proceedings had in said court in the case of George W. La Rue, complainant & appellee, against Western Electric Company, defendant & appellant, as the same remain of record and on file in said office.

Seal of U. S. Circuit Court, South. Dist. New York.

In testimony whereof I have caused the seal of the said court to be hereunto affixed, at the city of New York, in the southern district of New York, in the second circuit, this 22d day of October, in the year of our Lord one thousand eight hundred and eighty-seven, and of the Independence of the said United States the one hundred and twelfth.

TIMOTHY GRIFFITH, *Clerk.*

Endorsed on cover: S. New York C. C. U. S. No. 279. The Western Electric Company, appellant, *vs.* George W. La Rue. Filed October 24, 1887.

Office Supreme Court U. S.
FILED,
MAR 28 1891
JAMES H. McKENNEY,
CLERK.

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1890.

No. 279.

WESTERN ELECTRIC COMPANY,

APPELLANT,

v.

GEORGE W. LaRUE.

BRIEF FOR APPELLANT.

GEORGE P. BARTON, *for Appellant.*

Supreme Court of the United States from a decree lately rendered in the circuit court of the United States for the southern district of New York, made in favor of you, the said George W. La Rue, and have filed the security required by law: You are therefore hereby cited to appear before the said Supreme Court, at the city of Washington, on the twenty-fourth day of October, 1887, to do and receive what may appertain to justice to be done in the premises.

Given under my hand, at the city of New York, in the southern district of New York, in the second circuit, the 7th day of October, in the year of our Lord one thousand eight hundred and eighty-seven.

E. HENRY LACOMBE,
Circuit Judge.

Due service of a copy of the above citation is hereby admitted this 7th day of October, 1887.

BRIESEN & STEELE,
Sol'rs for Complainant and Appellee.

116 (Endorsed:) United States circuit court, southern district of New York. In equity. Geo. W. La Rue *vs.* Western Electric Co. Citation. U. S. circuit court. Filed Oct. 10, 1887. Timothy Griffith, clerk. Geo. P. Barton, Esq., sol'r for def't and appellant, 225 Dearborn St., Chicago, Ill.

117 UNITED STATES OF AMERICA, } *ss*:
Southern District of New York, }

I, Timothy Griffith, clerk of the circuit court of the United States of America for the southern district of New York, in the second circuit, do hereby certify that the foregoing pages, numbered from one to one hundred and sixteen, inclusive, contain a true and complete transcript of the record and proceedings had in said court in the case of George W. La Rue, complainant & appellee, against Western Electric Company, defendant & appellant, as the same remain of record and on file in said office.

Seal of U. S. Circuit Court, South. Dist. New York.

In testimony whereof I have caused the seal of the said court to be hereunto affixed, at the city of New York, in the southern district of New York, in the second circuit, this 22d day of October, in the year of our Lord one thousand eight hundred and eighty-seven, and of the Independence of the said United States the one hundred and twelfth.

TIMOTHY GRIFFITH, *Clerk.*

Endorsed on cover: S. New York C. C. U. S. No. 279. The Western Electric Company, appellant, *vs.* George W. La Rue. Filed October 24, 1887.

Office Supreme Court, U. S.
FILED,
MAR 28 1891
JAMES H. McKENNEY,
CLERK.

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1890.

No. 279.

WESTERN ELECTRIC COMPANY,

APPELLANT,

v.

GEORGE W. LaRUE.

BRIEF FOR APPELLANT.

GEORGE P. BARTON, *for Appellant.*

Supreme Court of the United States.

NO. 279. OCTOBER TERM, 1890.

WESTERN ELECTRIC COMPANY, *Appellant.*

v.

GEORGE W. LARUE.

BRIEF FOR APPELLANT.

STATEMENT OF THE CASE.

This is a suit in equity brought against appellant, defendant in the court below, for alleged infringement of Letters Patent No. 270,767, granted Edgar A. Edwards, Jan. 16, 1883 (application filed Sept. 23, 1882), for improvement in telegraph keys.

The defendant was held to have infringed the third claim of this patent on the telegraph key by reason of its manufacture and sale of telegraph sounders of the form shown in patent No. 352,317, granted defendant, as assignee of Charles D. Haskins, Nov. 9, 1886, for telegraph sounders.

It appears that this suit has been maintained in behalf of appellee by the New Haven Clock Company (page 27, folio 46).

ERRORS ASSIGNED.

1. The court below erred in not finding the Edwards patent void for lack of invention and utility, and for want of novelty.

2. The court below erred in holding that defendant's sounder was an infringement of the third claim of the patent.

Appellant then contends, *first*, that the patent is void; and, *second*, that there has been no infringement, and asks that the decree of the court below for a perpetual injunction, damages and costs, may be reversed.

I.

THE PATENT IS VOID FOR LACK OF INVENTION.

1. The patent is void on its face. Referring to the patent (pages 28 and 29), it will be found that the invention is stated to be "an improvement on the well-known Morse key, being in substituting for the trunnions or pivots upon which the lever vibrates a torsional spring or strip of metal." Taking the whole specification into consideration, can it be properly said that this amounts to a patentable invention? Does such a *substitution* involve anything more than mere mechanical skill? It is fairly implied that torsional springs, as such, were matters of common knowledge, and it is submitted that it did not require inventive skill to make such substitution.

2. The prior arts, as proven by this record, show that the patent is void for want of novelty.

In support of this, model exhibits were offered in behalf of appellant as follows: —

(*a*) Old-style Morse Key, page 31.
(*b*) Old-style Western Union Key, page 59.
(*c*) Spring Lever Telegraph Key, page 37.
(*d*) Warner Spring-Lever Key, page 47.
(*e*) Exhibit Pole Changer, page 30.
(*f*) Adjustable Torsional Spring, page 51.

Other analogous devices were described in the testimony of defendant's witnesses as follows: —

(*a*) A torsional clock spring. "The spring consisted of a strip of flat steel similar to a hoopskirt wire only thinner. It was suspended rigidly at either end with a crossbar fixed in the centre of the spring, on the end of which crossbar were weights or balls, the action of this spring being torsional as the balls revolve first one way and then the other, this movement being maintained back and forth by the action of an escape wheel in a clock in a well-known manner." This was in use in clocks repaired by the witness as early as 1869. (Witness C. D. Haskins, page 31.)

(*b*) The ordinary torsional door spring is described by the same witness (page 32). "One end of the steel rod or wire" is "fixed to

the wall, and the other end fixed on the side of the door near where it is hinged. This rod had means of adjusting the torsional power of the spring by means of a notched wheel rigidly fastened at one end of the rod, in one of which notches the pawl was placed."

Such a door spring was used twenty years ago in Bradford, Vt.

(*c*) Relays and sounders had their armature levers fulcrumed upon springs prior to 1864. Frank L. Pope describes such sounders and relays (page 38).

For explanation of the various model exhibits, reference is made to the depositions as follows : —

Ernest P. Warner, beginning with answer 7, page 47, and extending to page 55 ; also testimony of same witness, page 59.

Charles D. Haskins, folio 53, page 31, to folio 55, page 33 ; also answer to question 32, page 37.

John A. Seely, folio 51, pages 30 and 31.

Frank L. Pope, folio 61, pages 37 and 38 ; also answer 9, page 41, and answer 11, page 42.

Enos M. Barton, answer 13, page 57.

II.

Infringement.

Each combination claimed is stated to be "in a telegraph key." The defendant's device is a telegraph sounder.

A telegraph key is operated manually to break the circuit at one end of the line, while the sounder placed in the same circuit at the distant station responds.

One object of the Edwards invention is stated in the patent to consist in "discarding one of the hitherto necessary features, viz., the retractile springs.

The third claim of the Edwards patent reads as follows : —

3. The combination, in a *telegraph key*, of the *lever fulcrumed* upon the *torsional spring*, with the adjusting screws H H′ for *regulating the amplitude* of the lever movement and the *retractile resistance* of the torsion spring substantially as described (page 29).

It was contended that the other Claims, 1, 2 and 4, of the patent were infringed, but the court limited its finding of infringement to

Claim 3 since the *circuit breaking* lever is distinctly made an ingredient or element of said Claims 1, 2 and 4, and the sounder has no *circuit breaking* lever, but only an armature lever.

In the defendant's sounder, the retractile spring is not dispensed with and it would be inoperative without the retractile spring. In short, we contend that the sounder contains none of the elements of the combinations claimed in the patent.

In support of the defence of non-infringement, your attention is specially directed to the testimony quoted below.

Charles D. Haskins, beginning page 35, testifies: —

C. Q. 14. How does the torsional spring in the pole-changer compare in its operation and effect with the torsional spring in Exhibit Sounder Western Electric Company?

A. In both of them their chief function is a cheap mechanical means of supporting a vibrating or oscillating lever, doing away with trunnions and pivot screws.

C. Q. 15. You will notice that in the Exhibit Sounder the armature is held in a horizontal position above the magnets when the current is off; what holds it in that horizontal position?

A. Since its manufacture the torsional spring has been set, either through some violence or accident, so that its strain is such as to raise the lever in the manner described by you.

C. Q. 16. Please point out, if you can, what signs of such setting you find in the exhibit.

A. In the manufacture of these sounders I experimented to obtain the best results, which I found to be when the torsional spring supporting the lever was simply passive, allowing the armature to lay with its own weight on the magnet, depending wholly on the retrac tile spiral spring underneath to produce the upward movement of the lever, and I instructed the workman to so adjust them when he assembled the parts. My reason for supposing that the Exhibit Sounder Western Electric Company referred to had been changed, as to the set of the spring, is that I assumed the workman did as instructed.

C. Q. 17. Then you do not find any marks of violence on the instrument, and your supposition that it has been changed is only a general one, from the instructions which you gave your workmen?

A. It is quite possible to drop one, even without making any marks of violence, which would change the set of the spring, or a pressure by the thumb on the top of the spring might easily change the set of the spring. I don't wish to be understood as supposing that it was designedly changed, as I have seen several of the
58 instruments accidentally changed as to the set of the spring. In fact, that is the principal defect of the sounder, that they don't remain set in any particular place. There isn't any mark of violence on this one, and there need not necessarily be to change it.

C. Q. 18. Did you examine the Exhibit Sounder Western Electric Company before it was delivered to complainant's counsel?

A. I have no means of identifying any sounder delivered, as it would be impossible for me to examine each individual instrument that is manufactured under my superintendence, having to depend upon subordinates to see that instruments are manufactured as instructed.

C. Q. 19. The instrument, Exhibit Sounder, now before you has the coil detached at present. Is that sounder an operative instrument in this condition?

A. Strictly speaking, no; for the reason that a sounder should have means of varying the retractile force in proportion to the varying condition and power of the battery which supplies the electrical energy for its operation. It is conceivable, however, that it might happen to be placed in a circuit where the current might be just sufficient for it to work well when in its present state of adjustment; but when the battery grew either stronger or weaker, as it certainly would, it would cease working properly, as the retractile force would necessarily have to be changed to conform to such variations as the current would undergo, and there being no means of adjusting the retractile force without the use of the retractile spiral spring underneath or its equivalent, the sounder would become inoperative.

C. Q. 20. Didn't you state that the degree of retractile force exhibited by the spring was a matter of adjustment of the same on the lever?

A. I have made no statement by which I desired to be understood that there was any means of readily varying the retractile

force of the torsional spring to which the lever is fastened, the brass spiral spring underneath performing that office.

C. Q. 21. Do you mean to say that this torsional spring D cannot be adjusted in such a manner that the instrument will be operated without the use of the coiled spring?

A. The torsional spring D cannot be so adjusted that the sounder will work under all the varying conditions that an ordinary
59 Morse sounder is subjected to without the use of some adjustable device to vary its retractile force. In the present instance this adjustable device is the spiral spring underneath.

C. Q. 22. But still the torsional spring may be adjusted so that the instrument will be operative without the use of a coiled spring, may it not?

A. Any retractile force which is constant on the armature of the telegraph sounder would make that sounder inoperative for the purposes for which it is designed.

C. Q. 23. Then you referred to an instrument which to your knowledge was inoperative when you stated in the specification of your patent, lines 56 to 58, "The lever is preferably not dependent for its retractile force upon the spring D, although it may be so, but is assisted by a coil spring, E?"

A. The reference to an instrument wholly dependent for its retractile force upon the torsional spring D was associated in my mind with some device, of which there might be many, by which the retractile force of the torsional spring might be made variable. Under such conditions the retractile spiral spring underneath might be dispensed with.

C. Q. 24. And these means of adjusting or varying the retractile force of the torsional spring was so well known that you did not deem it necessary to refer to them in making that statement?

A. I did not deem it to be necessary to be very particular in the specification about things that did not relate pointedly to the claims which I desired to obtain, namely, the method of attaching the armature lever to the supporting spring.

C. Q. 25. In your answer to Q. 23 you state that you had in mind some device, of which there might be many, by which the re-

tractile force of the torsional spring might be made variable. To what devices do you refer in your answer?

A. The device I had in mind was means of varying the plane of the torsional spring at the two extremities where it is fastened to the supports.

C. Q. 26. Was there anything new in thus adjusting a torsional spring, or was it a matter of common knowledge among mechanics?

A. It was new to me.

Ernest P. Warner, folio 81, page 52, testifies: –

In the sounder the armature must have a definite adjustment with respect to the poles of the electro-magnet. This is effected by means of the stop screw carried by the lever, and when once made need not be changed. In the Exhibit Sounders there is no means whatsoever of adjusting the torsional resistance of the flat piece of metal or spring on which the lever is pivoted. Any adjustment of the stop screws which would affect the retractible resistance of the flat spring or torsional spring would so change the position of the armature with respect to the poles of the electro-magnet as to make the sounder inoperative.

Enos M. Barton, folio 88, page 58, testifies: —

A. The adjusting screws H H', of the third claim of the
88 patent, serve the double purpose of limiting the stroke of the key lever and also of regulating the tension of the spring. The adjusting screws of the sounder, which limit the stroke of the armature lever, do not serve the purpose of regulating the tension of the suspending spring. The sounder has a retractile spring, which is adjustable by itself, to give the upward movement or stroke to the armature lever. The object of the Edwards invention in the key, as claimed in the third claim and as explained in lines 45 to 50 and 68 to 87 of the specification, is to do away with the retractile spring as ordinarily used in telegraph keys. The object of the screws which limit the stroke of the sounder lever is precisely the same as that of the similiar adjusting screw of sounder levers as made for the last twenty or thirty years. They regulate the length of stroke of the armature lever and limit the armature in respect to the nearness of its poles to the poles of the electro-magnet. There-

fore I should say that the screws H H', as described in the third claim of the patent, are not found in the sounder.

Q. 18. State the position which the poles of the armature should have with respect to the poles of the electro-magnet.

A. The armature should approach very near to the poles of the electro-magnet without ever touching them.

Q. 19. Do you mean to say that the nearer the armature is to the poles of the electro-magnet the better, as long as it does not touch?

A. There should be about the thickness of ordinary writing paper between the poles of the magnet and the armature when the armature is nearest to the poles.

Q. 20. Do you find in the sounder a circuit-breaking lever or any device corresponding to or the equivalent of the lever mentioned in the third claim of the Edwards patent?

A. There is no circuit-breaking lever in the sounder, and no equivalent of the lever claimed in the third claim of the Edwards patent.

From the foregoing it appears that there has been no infringement, for the following reasons: —

1. Appellant's device, a sounder, is not a telegraph key or an equivalent device, while the claims of the patent are limited to a telegraph key.

2. The sounder has no circuit-breaking lever, and all the claims, including the third, are for combinations in which a circuit-breaking lever is a necessary element.

3. The sounder lacks the adjusting screws H H' of the third claim.

4. In the sounder, the flat spring, termed the torsion spring, is in function simply a pivot. In the key, the flat spring, in addition to its function of a pivot, has the function of opposing the downward pressure exerted upon the knob of the key by the hand of the operator.

5. The sounder is nearer the pole changer in structure and operation than it is to the key of the patent.

6. The sounder requires a retractile coil spring, while the patent

excludes from its scope even keys provided with springs under their circuit-breaking levers.

This Court has reiterated the doctrine that a patentee is bound by the terms of his claim. The requirement of the statute that the patentee must particularly point out and distinctly *claim* his invention benefits inventors as well as the public.

If Edwards was entitled to the broad invention now contended for, how easy it would have been for him to make the language of his claims so particular and distinct that Haskins, and all others would have been able to understand their scope so as not to be ensnared. This defendant used every reasonable precaution to avoid infringement (folio 85, pages 55 and 56). Had such broad claims been made, it is evident, from the prior state of the art as here disclosed, that they would not have been allowed by the Patent Office. There was no room for any but the most restricted claims. Let the scope of any claim of the patent be broadened to include generally the use of torsional springs in electrical instruments, and it must fail for want of novelty.

And, finally, it is urged, that, although the keys with their circuit-breaking levers mounted on torsional springs may be capable of use, still the proofs show that they are not as good as those in which trunnions are employed (folio 87, page 57), and such working backwards ought not to be called useful invention.

It is therefore respectfully submitted that the decision of the Court below should be reversed.

GEORGE P. BARTON,
For Appellant.

Office Supreme Court U. S.
FILED,
FEB 25 1891
JAMES H. McKENNEY,
CLERK.

Supreme Court of the United States,

OCTOBER TERM, 1890.

No. 279.

THE WESTERN ELECTRIC COMPANY,
Appellant,

vs.

GEORGE W. LA RUE.

APPEAL FROM THE CIRCUIT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF NEW YORK.

BRIEF ON BEHALF OF THE APPELLEE.

ARTHUR v. BRIESEN,
Of Counsel for Appellee.

Evening Post Job Printing House, N. Y.

Supreme Court of the United States.

OCTOBER TERM, 1890.

THE WESTERN ELECTRIC COMPANY,
Appellant,
vs.
GEORGE W. LA RUE.
No. 279.

Appeal from the Circuit Court of the United States for the Southern District of New York.

BRIEF ON BEHALF OF APPELLEE.

This suit was originally brought to restrain the defend- and appellant from infringing certain Letters Patent granted to one Edgar A. Edwards, January 16, 1883, number 270,767, for an improvement in telegraph transmitters. The complainant below prevailed. The opinion of the Court below sustaining the patent and decreeing an injunction and an accounting will be found on pages 62 to 64 of the Record. Prior to the final hearing, a preliminary injunction was granted by his Honor Judge Brown, after a careful investigation of the patent. His opinion upon that motion will be found in 28 Federal Rep., page 85.

THE PATENT.

A copy of the specification and drawing of the patent sued on is contained on pages 28–29 of the Record. The

invention is described therein as a "Telegraph Key," and "Improvements in Telegraph Transmitters." The invention of the patent, as set forth by the specification, consists in the use, in a telegraphic instrument, of a flat strip of metal, upon the centre of which a lever is fastened and which, when connected at its ends to suitable posts or supports by means of adjusting screws, serves as a torsional spring pivot for the said lever. The main object of the invention is the substitution of this torsional spring for the ordinary pivotal support previously used. This pivotal support consisted of tapering pivots or gudgeons projecting from the sides of the lever into the bearings, the same as in Exhibit Old Style Morse Key. This exhibit shows that the pivots require very exact construction and adjustment; that they are liable to wear loose in the sockets; that inexperienced operators are apt to turn the screws, that carry these sockets, too far, or not quite far enough, thereby either rendering the motions of the lever too difficult or making it swing too freely.

For this objectionable pivotal support the patentee Edwards substitutes a flat torsional spring, as shown in Complainant's Exhibit E. This flat spring is held at its end by ordinary screws upon the flat ends of two posts. Upon the middle of this spring is riveted the key lever, which carries regulating screws for controlling the extent of its vibrations.

The specification of the patent discloses that and why, by means of this torsional spring, the lever of a telegraph key is enabled to play freely between its points of contact without even using the ordinary retractile spring, such a retractile spring, for instance, as is shown beneath the lever of Exhibit Old Style Morse Key.

A modification of the flat spring is represented in Fig. 5 of the drawing of the patent, in which modification the spring is made with an extension L, or downwardly projecting lip, for the purpose of stiffening it. This modification, the Court will find, is also used in all of the defendant's infringing instruments.

The specification of the patent, after describing the construction of the telegraph key, says:

"*I do not limit myself to the application of torsional springs to telegraph keys alone, as it is obvious the torsional strip or spring may be applied to other electrical instruments. Thus it may replace the pivots or trunnion of the relay and sounder.*"

There are four claims in the patent; these are as follows:

"1. *In a telegraph key, the combination with the circuit-breaking lever of a torsional spring upon which said lever is fulcrumed, substantially as described.*

2. *In a telegraph key, the combination with the circuit-breaking lever of a torsional spring, provided with the rib D', said lever being fulcrumed on the spring, substantially as described.*

3. *The combination, in a telegraph key, of the lever fulcrumed upon the torsional spring, with the adjusting screws H, H', for regulating the amplitude of the lever movement and the retractile resistance of the torsion spring, substantially as described.*

4. *In a telegraph key, the combination with the circuit-breaking lever of a torsional spring upon which said lever is fulcrumed, the posts to which the spring is connected, and the screws E, E¹, substantially as described.*"

The above claims in connection with the specification show that it was the desire of the applicant for the patent to cover a torsional spring combined with the lever of a telegraph key or sounder in the manner in which it is shown to be combined in the drawing and specification of the patent.

The record also shows (pp. 10 and 11) that the defendant company manufactured for the complainant, La Rue,

the patented keys, like Exhibit E, before they began to infringe by making the sounder (Exhibit B and Exhibit Sounder, Western Electric Company) complained of. (See on this point also Haskins, defendant's engineer, p. 31 Record, and his cross-examination, p. 33.)

I.

Infringement is clear.

(*a.*) The appellant seeks to shield itself behind a thin drawn distinction between a "telegraph key" and a "sounder." Its contention is that the patent in suit is limited to the use of the torsional spring in a "key," and that the distinction between a "sounder" and a "key" is so great that it should not be held liable. To us there appears to be but slight difference between a "key" and a "sounder." A "key" is used to send off the message, a "sounder" to receive it. The "key" locks, the "sounder" unlocks the message. The essential part of a "key" is a lever which makes and breaks an electrical circuit. A "sounder" contains a lever which completes and breaks a magnetic circuit. The infringing instrument is called a "sounder." Its lever is riveted to and supported by a flat torsional spring in identically the same manner as the lever of the "key" shown in the drawings of the patent. The object of the spring in both cases is to support the lever, and to exert retractile or torsional force to allow the lever to play back and forth. It replaces the pivots or trunnion with which the "sounders" previously in use were supplied. There is, in our opinion, no appreciable difference, so far as the use and object of the torsional spring is concerned, between the "sounder" manufactured by the appellant and a telegraph key. The patentee appreciated this fact when he

made application for Letters Patent. In his specification, he states (p. 29, Rec.):

"*I do not limit myself to the application of torsional* "*springs to telegraph keys alone, as it is obvious* THE TOR- "SIONAL STRIP OR SPRING MAY BE APPLIED TO OTHER ELEC- "TRICAL INSTRUMENTS. THUS IT MAY REPLACE THE PIVOTS "OR TRUNNION OF THE RELAY OR SOUNDER."

The appellant appreciated this fact when it obtained the HASKINS PATENT after this suit was brought (reproduced at pp. 60 and 61, Record), for Haskins in his specification in referring to the patent in controversy, states (p. 60): "It has heretofore been proposed to support a LEVER "OF A KEY OR AN ARMATURE upon a flat torsional "spring." In other words, as the "LEVER OF AN ARMATURE" is only found in a "sounder," the patent under which the appellant manufacture, recognized the fact that the invention in suit was equally applicable to both telegraph keys and "sounders."

Considerable stress is laid by the defendant and appellant upon the fact that in all the claims the words "in a telegraph key" are found. They contend that in using these words the patentee has restricted his patent, so that only when his invention is used in a telegraph key can he hold any one liable for infringement. This is contrary to the spirit of the patent law and to the principles of equity. As Judge Brown, upon the motion for preliminary injunction in this case, stated in his opinion (28 Fed. Rep., p. 90):

"The fact that the machine in which a patented com- "bination is used is a different machine from that in "which the combination was first described, is not a valid "defense in a suit for infringement, where the combination "patented is only a part of the machine described. This "is illustrated by the case of *Rowell* v. *Lindsay* (113 U. S., "97), where the combination patented was for 'an im- "provement in a cultivator' and the infringement alleged

"was in a 'sowing machine.' Had the difference in the "machines been deemed material, that would have suf- "ficed to dispose of the case. That, however, was evi- "dently not the view of the Court. Instead of that, a "laborious consideration of the mechanical equivalency of "one of the elements used was entered into and fur- "nished the ground on which the case was decided.

"The case of *Zinn* v. *Weiss*, 7 *Fed. Rep.*, 914, seems to "be analogous to the present, though that case was less "strong for the inventor. There the invention described "was of a metallic plate to be used as a fastener. The "language of the claim was for 'an improved clothes- "fastening attachment,' &c, while the defendant used "the same fastening attachment for a pocketbook. The "same point here taken was raised there, and it was held "to be an infringement (*see also Reed* v. *Chase*, 25 *Fed. Rep.*, 94–100; *Hobbie* v. *Smith*, 27 *Fed. Rep.*, 656–659)."

In this connection the following cases are of value:

"In *Winans* v. *Denmead* (15 *How.*, 342–343–34)4, the Court says:

"It is generally true when a patentee describes a "machine and then claims it as described that he is un- "derstood to intend to claim, and does by law actually "cover, not only the precise forms he has described, but all "other forms which embody his invention. * * * *

"*Where form and substance are* INSEPARABLE *it is* "*enough to look at the form only. Where they are sepa-* "*rable, where the whole substance of the invention* MAY "BE COPIED IN A DIFFERENT FORM, *it is the duty of courts* "*and juries to look through the form for the substance of* "*the invention, for that which entitled the inventor to his* "*patent, and which the patent was designed to secure.* "*Where that is found there is an infringement, and it is* "*not a defense that it is embodied* IN A FORM NOT DE- "SCRIBED AND IN TERMS CLAIMED BY THE PATENTEE. "*Patentees sometimes add to their claims an express de-* "*claration to the effect, that the claim extends to the thing* "*patented, however its form or proportions may be varied.* "*But this is unnecessary.* THE LAW SO INTERPRETS THE "CLAIM WITHOUT THE ADDITION OF THESE WORDS. * * *

" *It is not necessary that the defendants' cars should em-*
" *ploy the plaintiff's invention to as good an advantage*
" *as he employed it, or that the result should be precisely the*
" *same in degree. It must be the same in kind and effected*
" *by the employment of his mode of operation* IN SUB-
" STANCE."

In *Blanchard* v *Reeves*, 1 Fisher, 103, 108, Judge Grier said:

" *The complainant's specification decribes a machine*
" *which effects its result by a combination of lateral and*
" *rotary motion to form a helical course or track in the*
" *operation of the machine. But is that of the* ESSENCE
" OR SUBSTANCE *of his invention? or is it not merely an*
" *accident to that* PARTICULAR FORM *of the machine de-*
" *scribed? * * * Such a change in the subordinate agents*
" *or devices affecting the motions of the model and guide*
" *only in the* FIGURE OF THEIR PATH *or the relative lines of*
" *their movements, in no case changes the principal essence,*
" *substance or character of the machine. We cannot shut*
" *our eyes to the fact that the defendants have pirated the*
" *invention of the complainant in all its essential parts.*"

In *Ives* v. *Hamilton*, 92 U. S., 426–430, the claim was for the combination of the saw " with a pair of *curved* guides " at the upper end of the saw," and other mechanical devices. The Court said:

" *The defendant is using a saw in which the guides* ARE
" NOT CURVED, *it is true. * * * The question in the*
" *case, therefore, is whether the defendants used the same*
" *or equivalent means, that is, the same or substantially*
" *the same combination of mechanical devices. The sub-*
" *stitution of guides at the top, made crooked by a broken*
" *line instead of a curved line, is too transparent an imi-*
" *tation to need a moment's consideration. A curve itself*
" *is often treated in mathematical science as consisting of*
" *a succession of very short straight lines, or as one*
" *broken line constantly changing its direction. * * **
" *At all events, in mechanics, when, as in this case, a*
" *broken line is used instead of a regular curve, being de-*
" *flected at one or more points by a very slight angle, and*

"*performing precisely the same office of curves similarly* "*situated, the one is clearly the equivalent of the other.*"

In *Smith* v. *Higgins*, 1 Fish., 537–541, Judge Nelson said:

"*In order to constitute an infringement, it is not neces-* "*sary that the arrangement and combination of the party* "*charged with the infringement should be the same to the* "*eye*, BUT IN POINT OF FACT. *If they embody the ideas of* "*the patentee, and the machinery of the defendants oper-* "*ates by such adoption and appropriation, then, though* "*the arrangement may be apparently different in reality,* "*and in judgment of law, an infringement exists.*"

In *Union Paper Bag Co.* v. *Nixon*, 6 Fish., 402, 412, Judge Emmons said:

"* * * *But it would be a blemish upon the law, which* "*professes to protect useful improvements, if such substi-* "*tutes capable of selection by persons of ordinary intelli-* "*gence are not deemed invasions of an inventor's rights.*"

See also Weston *v.* Nash, 1 Holmes, 488.
Graham *v.* Mason, 5 Fish., 1.
McComb *v.* Brodie, 5 Fish., 384.
Mason *v.* Graham, 23 Wall., 261.
Consolidated Valve Co. *v.* Crosby Valve Co., 113 U. S., 157.

(*b.*) The appellant further contends that the presence of the words "circuit-breaking lever" in the first, second and fourth claims shows that the patentee intentionally limited his invention to a telegraph *key*, since in the "sounder" there is no "circuit-breaking lever." If such were the case it fails to explain why in the third claim all mention of a CIRCUIT-BREAKING lever is omitted. Upon the motion for preliminary injunction Judge Brown had the file wrapper and contents of the patent before him, (*the same having been proffered by the then defendant, and now appellant*, upon that motion, BUT NOT UPON FINAL HEARING), and upon examining it, he said of this third claim:

"*The third item, however, omits any reference to "a* "*circuit-breaking lever,' and claims 'the combination in*

" a telegraph key, of the lever fulcrumed upon the torsional " spring, with the adjusting screws H, H',' &c., &c. The " paragraph immediately preceding the four specifications " of the claim, above quoted, expressly states, however, " that the inventor does ' not limit himself to the applica- " tion of the torsional spring to telegraph keys alone.' " ' It may replace,' he says, ' the pivots or trunnions of " the relay and sounder.' This is the precise applica- " tion and use of the invention that the defendant is now " making."

The entire patent will be read in connection with the claims, and the patent speaks of a sounder and the lever of a sounder as intended to be covered by the terms of its claim. The Court will seek to so read the patent as to make it sensible and not absurd (Providence Rubber Co. *vs.* Goodyear, 9 Wall., 788–795). It would be the height of absurdity for a patentee to say that a sounder is apt to receive the torsional spring, and that this is within the scope of the invention, and then to claim that which would exclude the sounder.

Even though the claims should cover circuit-breaking levers in terms, and even though a sounder would not have a circuit-breaking lever, yet a patentee is always authorized to invoke the doctrine of equivalents (Gill *vs.* Wells, 22 Wall., 1, 28; Knapp *vs.* Joubert, 19 Blatchf., 148). In this case the patentee has distinctly stated what would be equivalent of the circuit-breaking lever; and it is not asking much, therefore, to request this Court to apply at least those instrumentalities under the rule of equivalency to the claims which are specified as such in the patent.

But finally, nothing is clearer (and an examination of a sounder will disclose this fact) than that the lever of a sounder is also a circuit-breaking lever. A sounder operates upon an electric current by alternately opening and closing a *magnetic* circuit—that is to say, the coils of the electric magnet of a telegraph sounder are magnets which attract towards them at certain times the upper

cross bar, commonly termed the armature, and at certain times will break circuit with the same, allowing the torsional spring in this case to draw back the armature from the coils. Thus the sounder has a *magneto* circuit-breaking lever, whereas the sending key has an *electro* circuit-breaking lever.

As Judge Brown very aptly said, a sounder is a key as much as the instrument termed a telegraph key. The telegraph key as such locks the message into the wire; the sounder as such unlocks it; both are keys.

This case is like one where a person had invented an improvement in upholstering chairs. He would say in his specification that his improvement is applicable also to lounges and to sofas; but in his claim he would say, "I claim a chair back upholstered as described." The defendants in this suit would construe such a claim as a disclaimer of the same invention when applied to a lounge, because the lounge as such was not "named" in the claim.

We think we have clearly established that upon a comparison with the complainant's patent the defendant's sounders infringe the same. Our position is strengthened by the fact that SINCE THIS SUIT WAS BROUGHT the defendants have caused Mr. Charles D. Haskins, one of their employees (see page 31, Record), to apply for and obtain a patent, No. 352,317, for their sounder, in which patent they say that the torsional spring that they use "may be applied to the armature lever of any telegraphic receiving instrument or to the lever of any telegraphic key;" and then they proceed to claim the RIB on the torsional spring which is shown in Fig. 5 of the Edwards patent, when said rib is inserted into a grove or slot of the lever, as in the infringing sounder.

The defendants' expert, Mr. Pope, shows (page 44, Record, answers 23 to 29, inclusive) substantially that if there is no difference between a sounder and key for the purpose of the later Haskins patent, under which defendants claim, there can be no difference for the purposes of this investigation on the question of infringement.

Mr. Pope (answers to question 16, page 43, Record) also shows that he retracts from the position originally assumed, to the effect that in the second claim of complainant's patent the circuit-breaking lever is an essential element.

The fact proven by Muller, page 11, and admitted by Mr. Haskins, page 31, and Armstrong on page 45, that telegraph keys like Exhibit E were originally made by the defendant company for the complainant and stamped with the date of complainant's patent, should also not be lost sight of, as it indicates that the defendants derived all their knowledge respecting the improvements here in suit directly from complainant's structure and patent.

As Judge Coxe says (page 64, Record):

"*The third claim does not contain the element of a* "*'circuit-breaking lever,' and, in view of the clearly* "*expressed intention of the patentee to include other tele-* "*graphic instruments, it must be held to include the lever* "*of a sounder. Fairly construed, the claim should read:* "*'The combination in a telegraph key or sounder.' To* "*restrict it to a 'key' alone, as that word is known in* "*telegraphy, would be most illiberal and would unduly* "*circumscribe the invention. No better illustration of this* "*can be found than the following statement from the* "*Haskins patent before alluded to.*

"*'The invention has been described in connection with a* "*'telegraphic sounder, but it is evident that the torsional* "*'spring may be applied to the armature lever of any* "*'telegraphic receiving instrument or to the lever of any* "*'telegraphic key without departing from the spirit of* "*'the invention.'*

"*Equally it is true that the Edwards spring may be* "*applied to a sounder without departing from the spirit* "*or the letter of the invention.*"

So whilst we contend that the present appellants have infringed all the claims of the patent in suit, yet, of all

the claims of the patent, the infringement of the third is most palpable.

In the language of Judge Brown:

"*In this case, the exact combination invented and described in the claim is appropriated in the defendant's 'sounder.' Is it to be excluded as not covered by the patent merely because in the four numbered specifications of the claim the combination is described as existing in a 'telegraph key,' although the use of the combination in a sounder is clearly intended to be covered by the preceding clause? I think not.*"

(*c.*) The third contention of the appellant was that if the third claim should be construed to cover a "sounder," yet, the adjusting screws *H H'* of that claim, are not found in the defendants' sounder, and therefore the appellant does not infringe said claim. In answer to this, Judge Coxe's opinion on final hearing (see Record, p. 64) is appropriate, especially that portion which we now quote:

"*Do the defendants infringe? They argue in the negative, for the reason that the combination of the third claim is confined to a telegraph key and by implication, to a 'circuit-breaking lever,' and as they use the combination in a telegraph sounder and not in a key, do not infringe.* THEY INSIST, FURTHER, THAT THEY DO NOT EMPLOY THE ADJUSTING SCREWS *H H'*. *In regard to the latter suggestion, the* DEFENDANTS' EXPERT *testifies* (see Rec., p. 40, Q. 8): 'I FIND TWO ADJUSTING SCREWS HAVING A RELATION TO THE LEVER OF THE SOUNDER SIMILAR TO THAT OF THE SCREWS *H H'* TO THE LEVER OF THE KEY IN THE PATENT; *but, in the sounder, they do not practically have any effect upon the retractile force applied in the lever.*'

"THE COMPLAINANT'S EXPERT CONSIDERS THE FUNCTIONS THE SAME IN EVERY PARTICULAR (*see Rec., p.* 19, *Q.* 10). THE COURT IS SATISFIED THAT HE IS CORRECT."

(*d.*) Some effort was made by the appellant to show that the infringing sounder, inasmuch as it has a retractile

spring below the torsional spring, cannot be said to infringe the patent in suit, since the patent says that a retractile spring is avoided by the invention. The fact, however, is—and Dr. Sloane demonstrates it to a certainty —that the defendant's sounder will operate, if only the torsional spring is used (see answer 6, pages 17 and 18, Record). But even if the defendant had used the invention of complainant, plus something else, that would not relieve them from the charge of infringement.

A perusal of the patent will show that its primary object is to substitute for the ordinary pivotal bearing the torsional support or spring. The displacement of the retractile spring is only a secondary consideration, and is not, according to the specification and claims, a vital feature of the improvement. Thus, in the specification (page 28, Rec.), the patentee states that his invention is as follows:

"My invention relates to telegraph keys or instruments "used for transmitting telegraphic signals, and is an im- "provement on the well-known Morse key, BEING IN "SUBSTITUTING FOR THE TRUNNIONS OR PIVOTS UPON WHICH "THE LEVER VIBRATES, A TORSIONAL SPRING OR STRIP OF "METAL."

Again, the complainant's patent distinctly shows that, although the retractile spring is deemed avoided in the mere *telegraph key*, the torsional spring in the *sounder* is to replace only the pivots, and not the retractile spring. See last part of specification, where it says:

"*I do not limit myself to the application of torsional springs to telegraph keys alone, as it is obvious the torsional strip or spring may be applied to other electrical instruments. Thus it may replace* THE PIVOTS OR TRUNNION *of the relay and sounder.*"

II.

The invention in suit is useful.

The appellant contends that the improvement in controversy possesses no utility, and introduced testimony to show that the improvement has not gone into general or extensive use.

A complete refutation to this defense may be found: *first*, in the fact that the appellant itself, through one Haskins, has applied for and obtained a patent in which the torsional spring is one of the elements. This patent may be found at pages 60–61, Record. *Second*, that telegraph keys and sounders containing the improvement have been sold in considerable quantities, being at the present time in practical use (see deposition of Haskins, p. 31, Rec.; Armstrong, p. 45, Rec.).

Third. THE APPELLANTS UPON THE ACCOUNTING STIPULATED (p. 66) THAT THEY HAD MADE ELEVEN HUNDRED OF THE SOUNDERS CONTAINING THE IMPROVEMENT! Judge Coxe admirably states the falsity of appellants' position as regards this defense, in the following words (page 63, Record):

"The defendant insists that the patent is void for "want of utility and invention, and that they do not "infringe; but a word need be said regarding the first "defense. Several instruments embodying the invention "have gone into practical operation and have apparently "been received with favor by telegraphists. In fact, it "appears that an employee of the defendants, Charles D. "Haskins, has since the commencement of this suit "secured a patent dated November 9, 1886, for an "improvement in telegraph-receiving instruments, one "element of the combination being a torsional spring "substantially identical with the patented spring, the "only difference being in the manner in which it is "fastened to the lever. This patent was assigned to the "defendants. It can hardly be said, then, that Edwards' "invention is without utility. That which is used is

"useful. A thing to be useless can have no utility "whatever. A patent is never declared invalid upon "this ground at the instance of one who is deriving "benefit by infringing upon its claims" (Gibbs *v.* Hoefner, 22 Blatchf., 36, and cases cited).

III.

The patent in controversy covers a pioneer invention, and there is no suggestion in the prior state of the art, as illustrated by the exhibits in this suit, which would detract from its novelty and patentability.

The exhibits which appellant has offered are styled, as follows: 1, pole changer; 2, old style Morse key; 3, spring lever key; 4, Warner spring lever key; 5, adjustable torsional spring; 6, old style Western Union key.

1. THE EXHIBIT POLE CHANGER may best be described in the words of Judge Cox, as follows: *In the "pole changer" * * * "there is a lever which oscillates between fixed "points and is fulcrumed upon the* FREE END *of a* NON-"ADJUSTABLE *torsional spring. The principal office of "this spring is to form a supporting fulcrum for the "armature lever. The retractile force exerted by it is "very slight. If one of the supporting posts in the "patented apparatus were removed, its similarity to the "'pole changer' would be more apparent."*

Mr. Pope, appellant's expert, is asked respecting this pole changer, the following questions (p. 44):

"*Q. 20. What is the principal moving power in the Exhibit Pole Changer which restores the armature to its normal position when the current is interrupted?*